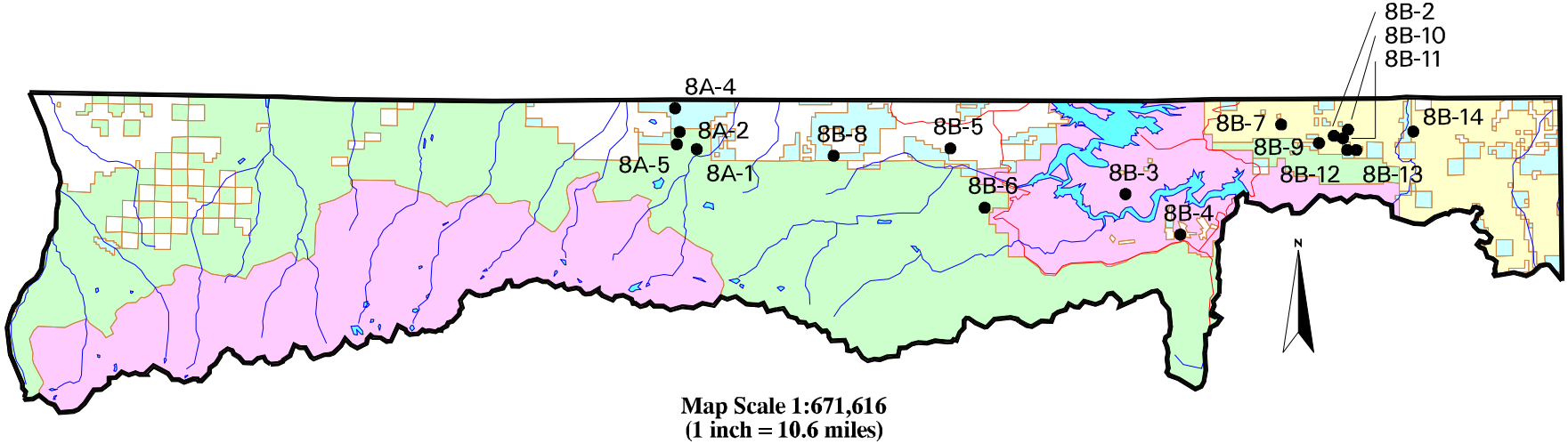
Management Units 8A & 8B

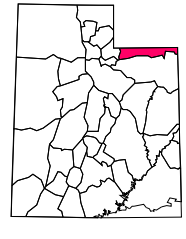


Map Scale 1:671,616
(1 inch = 10.6 miles)

Legend

- Forest Service
- BLM
- State of Utah
- Other Federal Land
- Private
- Water Body
- Transect Location
- Road
- Perennial Stream

Unit Location



WILDLIFE MANAGEMENT UNIT 8A - NORTH SLOPE, SUMMIT

Boundary Description

> **Summit county** - Boundary begins at the junction of Highway SR-150 and the Summit-Duchesne county line (summit of the Uinta Mountains); north along SR-150 to the Utah-Wyoming state line; east along this state line to the Brunt Fork-Birch Creek drainage divide; south along this drainage divide to the Burnt Fork-Sheep Creek drainage divide; south along this drainage divide to the Summit-Duchesne county line (summit of the Uinta Mountains); west along this county line to SR-150 and beginning point.

Unit Description

The North Slope, Summit Wildlife Management Unit is located along the north slope of the Uinta Mountains in Summit County. Unit 8A is a sub-unit of the North Slope Wildlife Management Unit. The other sub-unit, 8B, covers Daggett County. Elevation of unit 8A ranges from 7,500 feet to over 13,000 feet. Habitat varies from sagebrush and mountain brush communities to alpine tundra above the timberline which includes vast expanses of lodgepole pine. Several major drainages are located within the unit including: Bear River, Black's Fork, Smith's Fork, Henry's Fork, and Burnt Fork. Winter range in Utah is a critical limiting factor on the unit with many deer wintering in Wyoming.

In previous reports, the 5 trend study sites in this unit were included in Herd Unit 9 - Daggett. The study areas in herd unit 8A emphasize areas around Widdop Mountain and the Bald Range which are just west of the herd units eastern boundary and Burnt Fork-Birch Creek drainage divide. This area is considered important winter range for elk which summer on the north slope of the High Uinta mountains. According to the 1995 Big Game Harvest summary (Evans et. al 1995), there is approximately 365,000 acres of summer range on the unit, 88% of which is administered by the U.S. Forest Service. Private land owners control 11%, while the State of Utah administers 1%. There is about 35,100 acres of winter range with the majority (44%) being privately owned and another 42% administered by the Forest Service. The state owns 7%.

To meet the need for vegetative trend data on key elk winter ranges on the North Slope of the Uinta Mountains east of Beaver Creek, 6 new interagency range trend studies were established in the area in September 1988. The key areas are found on the mountain mahogany slopes of Phil Pico Mountain, Bald Range, Widdop Mountain, and Jessen Butte. These areas are mostly public land, although there is a considerable amount of private land in the Birch Creek and Beaver Creek drainages below the U.S. Forest boundary. The state of Utah owns several large sections, containing the study areas on Phil Pico Mountain (8B-8) and the Bald Range (8A-3 & 4). The study sites on Widdop Mountain (8A-1 & 2), including Telephone Hollow (8A-6), are on the Wasatch National Forest. The site on Phil Pico Mountain is now within sub-unit 8B and will be discussed in that section.

These sites receive moderate to heavy use by elk in the winter. Deer use is light to moderate in the winter with some summer use. Three of the 5 trend sites also show light winter use by moose, with year round antelope use of the area. Winter use by antelope and deer is dependent on weather conditions. All areas are permitted for livestock grazing. While the valleys are often heavily used by cattle, on-site observations indicate light or no use on the steep, mountain brush hillsides.

Unit Management Objectives

The management plan for Unit 8 (8A & 8B), includes a target herd size of 5,300 wintering deer with a composition of 15 bucks to 100 does. Thirty percent of the bucks are to be 3-point or better. The elk management objective is to achieve a target winter herd size of 2,100 (1,600 in Summit and West Daggett; and 500 in the Three Corners) with a minimum post season bull to cow ratio of 8:100. At least 4 of these bulls will be 2 ½ years of age or older.

Study Site Description

All range trend studies in Unit 8A sample the true (birchleaf) mountain mahogany range type. These studies provide a good representation of a majority of the key birchleaf mahogany winter range in the area. Except for Widdop Mountain North Slope (8A-2) which is situated on a north slope, the remainder of the study sites are located on south-facing slopes. These slopes tend to be moderately steep with rocky soil, typical of the dry, coarse, shallow soils often occupied by mountain mahogany.

All of the 5 trend study sites in sub-unit 8A were established in 1988 and reread in 1995. During the 2000 season, 4 of the 5 studies were reread with Bald Range South (8A-3) being discontinued due to it's close proximity and similarity with Bald Range (8A-4).

Trend Study 8A-1-00

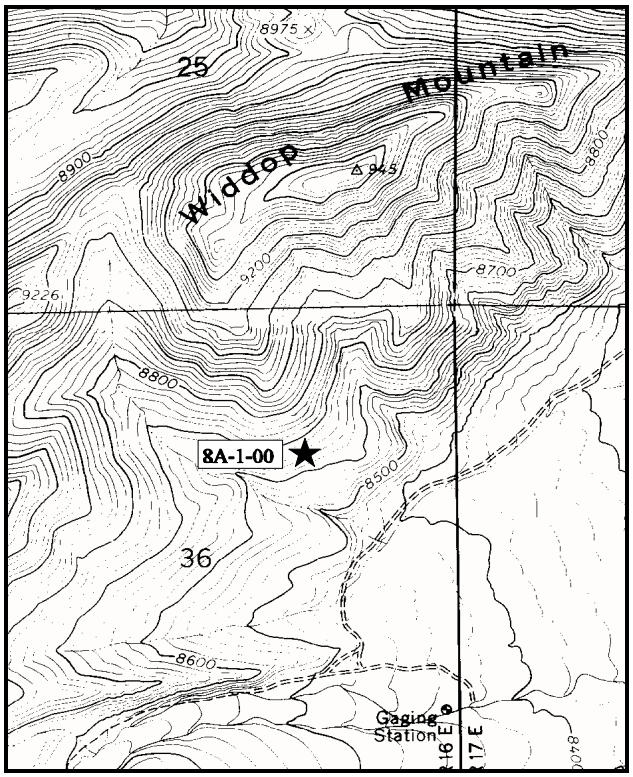
Study site name: Widdop Mountain South Slope . Range type: True Mountain Mahogany .

Compass bearing: frequency baseline 154°M .

First frame placement on frequency belts 5 feet. Frequency belt placement; line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

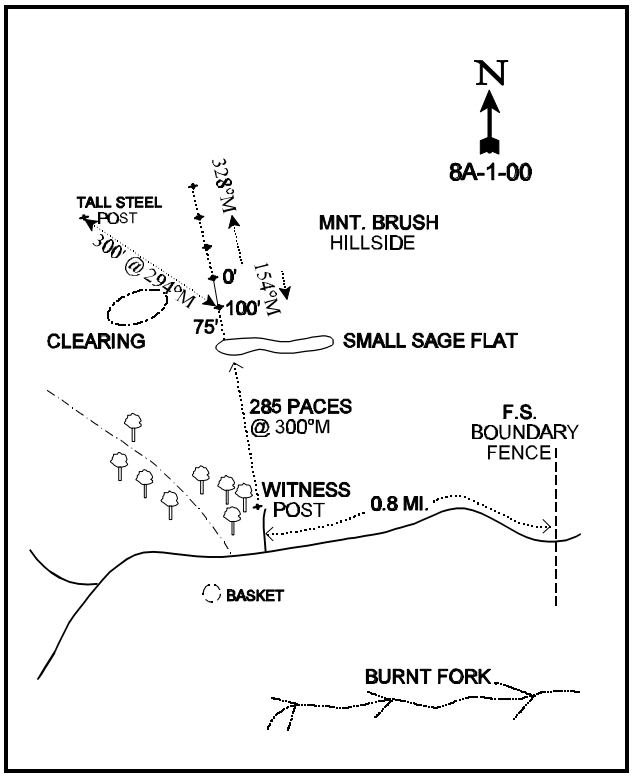
LOCATION DESCRIPTION

Two miles south of the Wyoming-Utah state line, on the Hoop Lake Road along the Middle Fork of Beaver Creek, turn east toward Gregory Basin. Go 0.6 miles to a private property fence. Continue east 1.1 miles, going past a cabin to a fence. Go 0.1 miles to a fork, continue straight. Go 0.4 miles to an old 4-way intersection south of Gregory Basin. Continue east for 0.7 miles to the FS boundary fence. Go 0.9 miles (past study 8A-2-00) to another FS fence. Continue 1.8 miles to a gate. Go through the gate and 0.4 miles to a fork. Bear right. Go 2.3 miles SW back to a FS boundary fence. Proceed 0.8 miles to a faint fork. Turn right and pull up about 50 yards along a small drainage. Stop by a witness post (tall green fencepost) next to a clump of aspens. From here, hike NW 500 yards up the slope. The 0-foot baseline stake is marked by browse tag #7155.



Map Name: Hoop Lake

Township 3N , Range 16E , Section 36



Diagrammatic Sketch

UTM 4533803 N, 578141 E

DISCUSSION

Trend Study No. 8A-1

The Widdop Mountain South Slope study is located on the south side of Widdop Mountain. The open mountain mahogany slope overlooks large sagebrush parks in the Burnt Fork drainage. The elevation at the site is 8,650 feet. It is on a moderately steep (26%), south-facing, well-drained slope. The land is administered by the Wasatch National Forest which is permitted for summer cattle grazing. The cows tend to stay in the valley bottom near water, so livestock use is light on the brushy mountain slopes. These slopes receive the most use from wintering elk as evidenced by the higher quadrat frequency of elk pellet groups. Pellet group transect data from 2000 estimate moderate elk use at 66 elk days use/acre (163 edu/ha). There is also indications of light use by moose and deer (see pellet group table). In 2000, nearly all of the deer pellet groups appeared to be from the fall, while most of the elk use seemed to be from winter, and moose use primarily from spring.

The soil is a moderately deep, rocky, sandy loam with an effective rooting depth of nearly 13 inches. Soil depth measurements (effective rooting depth) were deepest near serviceberry and mahogany plants. The soil profile contains a light colored horizon at approximately 3 to 6 inches in depth that contains calcium carbonate particles. Rock cobble and gravel are common on the soil surface and concentrated in the top 12 inches of the soil. Parent material consists of limestone and sandstone colluvially deposited from Widdop Mountain. Some limited soil movement is apparent in the form of soil pedestalling on the uphill side of shrubs and some terracing on the steeper slopes. However, erosion is not a problem on the site due to the abundant vegetation and litter cover.

True mountain mahogany is the key browse species which provided 84% of the browse cover in 1995 and 79% in 2000. During the 1995 reading, the proportion of mature plants increased, while the number of plants in all other form classes declined. The biggest decline was in the number of young plants which were abundant in 1988. The young plants counted in 1988, apparently got established during the favorable wet years of 1983 and 1984. Drought conditions that followed have reduced the number of seedlings and young within the population. Young plants accounted for about 56% of the mahogany population in 1988, declining to 27% and 29% in 1995 and 2000 respectively. Few seedlings were sampled in 1995 or 2000. Use of the more palatable mahogany has been moderate to heavy during all years, although slightly heavier in 2000. However, percent decadence is low and vigor is normal for most plants. Some insect damage was noted in 1995, with the dry conditions of 2000, some mahogany leaves have started to dry out and turn yellow by early August. Some of the heavy use reported in 2000 may be partly due to poor annual leader growth caused by the extremely dry conditions. Average annual leader growth was only 3 inches for mahogany.

Additional browse forage is provided by serviceberry, mountain big sagebrush, winterfat, bitterbrush and snowberry. Patches of sagebrush tend to dominate the more level areas on the hillside. Smaller plants like low rabbitbrush, horsebrush, and especially broom snakeweed, are fairly common yet unimportant as forage.

The abundant and well established grasses provided 34% of the vegetation cover in 1995 and 36% in 2000. Bluebunch wheatgrass is especially abundant on this site. A small sedge is also very common. These two species provided 84% of the grass cover in 1995 and 92% in 2000. Indian ricegrass is moderately abundant, while other grasses are found only occasionally. A good variety of forbs are present on the site. None are noteworthy except for thistle which appears to be increasing in the open areas, and the preferred low penstemon and flax.

1995 TREND ASSESSMENT

Since vegetative cover was estimated differently in 1995 than in 1988, care should be taken when directly comparing basic vegetation cover from the earlier readings. In 1988, points on the quadrat were used to estimate cover. As a result, only basal vegetation cover was estimated. In 1995, aerial cover for vegetation was estimated for all ground cover categories which can usually total more 100%. Refer to the methods section of this report for further information on the methods.

Ground cover characteristics haven't changed a great deal on this site. Percent bare ground has declined slightly while litter cover has gone down moderately due to drought. Erosion does not appear to be a problem on the site due to the abundant herbaceous vegetation which provides 44% of the vegetative cover. The high values for nested frequency for vegetation and litter (347 and 388 out of a possible 400) suggest well dispersed protective cover. Trend for soil is currently considered stable. Trend for the key browse species, true mountain mahogany, is mixed. On the positive side, percent decadency is less than one percent, but it was already low at 6% in 1988. The proportion of shrubs displaying heavy hedging has also declined while generally showing good vigor. On the slightly downward side, the numbers of seedlings and young have declined, but this is not critical for a fairly long-lived species. The large number of young plants and noted decline is most likely due to the wet years in the early to mid-1980's followed by several years of drought. Differences in young and seedling plants may also be to the much larger sample used in 1995 which more accurately estimates shrub populations. This trend is common throughout the herd unit and in other areas of the state. Trend for browse on the site is considered stable due to the low decadency rate, adequate reproductive potential (27%), stable vigor and reduced heavy hedging.

Trend for the herbaceous understory is slightly down due to a decline in sum of nested frequency for both perennial grasses and forbs. This is also a common trend through out the state during these drought years. Nested frequency of bluebunch wheatgrass increased significantly while frequency of most of the other perennial grasses declined.

TREND ASSESSMENT
soil - stable (3)
browse - stable but reduced reproductive potential (3)
herbaceous understory - slightly down (2)

2000 TREND ASSESSMENT

Trend for soil is fairly stable. Erosion is not a problem on the site due to the abundant and well dispersed vegetation and litter cover. Trend for the key browse species, true mountain mahogany, is also stable. Utilization is somewhat heavier than 1995 estimates. However, percent decadence is relatively low at 10%, vigor is normal on most plants, and 29% of the population consists of young plants. Some of what appears as increased use may be due to poor leader growth on mahogany in response to the extremely dry conditions of this growing season. Poor leader growth makes shrubs appear to be more heavily used. Trend for the herbaceous understory is stable with similar sum of nested frequencies for perennial grasses and forbs compared to 1995.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 08A, Study no: 1

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	a-	ab3	b12	-	1	5	.03	.10
G	Agropyron spicatum	a233	b286	b276	86	94	94	9.56	12.51
G	Bromus inermis	a-	b10	ab2	-	3	1	.06	.00
G	Carex spp.	b188	a136	ab157	76	57	65	3.57	6.02
G	Festuca ovina	-	-	4	-	-	2	-	.03
G	Koeleria cristata	b60	ab45	a26	26	21	12	.58	.23
G	Leucopoa kingii	b23	a10	a10	11	4	5	.02	.07
G	Oryzopsis hymenoides	b65	ab59	a42	33	26	18	1.72	1.34
G	Poa fendleriana	a-	b14	a-	-	6	-	.08	-
G	Poa secunda	-	-	1	-	-	1	-	.00
G	Stipa comata	c40	b6	a-	19	3	-	.09	-
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		609	569	530	251	215	203	15.72	20.34
Total for Grasses		609	569	530	251	215	203	15.72	20.34
F	Arabis spp.	-	3	-	-	1	-	.03	-
F	Aster chilensis	b10	b4	a-	4	3	-	.06	-
F	Astragalus spp.	3	-	1	2	-	1	-	.03
F	Calochortus flexuosus	a-	b7	ab2	-	4	1	.07	.00
F	Chaenactis douglasii	-	1	6	-	1	2	.00	.01
F	Chenopodium leptophyllum (a)	-	2	-	-	2	-	.01	-
F	Cirsium spp.	59	48	57	32	25	28	1.62	1.47
F	Comandra pallida	1	1	-	1	1	-	.03	-
F	Cryptantha spp.	a42	b90	ab71	21	37	34	1.04	.94
F	Cymopterus spp.	-	-	1	-	-	1	-	.00
F	Descurainia pinnata (a)	a14	b54	a1	8	23	1	.22	.03
F	Eriogonum umbellatum	-	-	1	-	-	1	-	.00
F	Hymenoxys acaulis	2	-	-	2	-	-	-	-
F	Lesquerella alpina	b40	a19	ab40	20	11	23	.05	.31
F	Leucelene ericoides	21	10	15	8	4	6	.02	.13
F	Linum lewisii	a2	a5	b21	2	2	9	.03	.12
F	Lithospermum ruderale	a8	b26	b28	4	15	14	.39	.40
F	Machaeranthera canescens	-	-	1	-	-	1	-	.00
F	Machaeranthera grindelioides	a4	b18	b25	2	10	11	.20	.48
F	Penstemon humilis	b96	a38	a30	48	19	17	.24	.45
F	Phlox hoodii	b51	ab34	a34	24	16	17	.42	.60
F	Senecio multilobatus	b30	a6	b26	13	3	15	.01	.37

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
F	Taraxacum officinale	$_{a}$-	$_{b}$10	$_{a}$2	-	6	1	.03	.03
F	Tragopogon dubius	-	-	1	-	-	1	-	.00
F	Zigadenus paniculatus	4	6	1	3	2	1	.01	.00
Total for Annual Forbs		14	56	1	8	25	1	0.23	0.03
Total for Perennial Forbs		373	327	363	186	161	184	4.30	5.38
Total for Forbs		387	383	364	194	186	185	4.53	5.41

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --
Herd unit 08A, Study no: 1

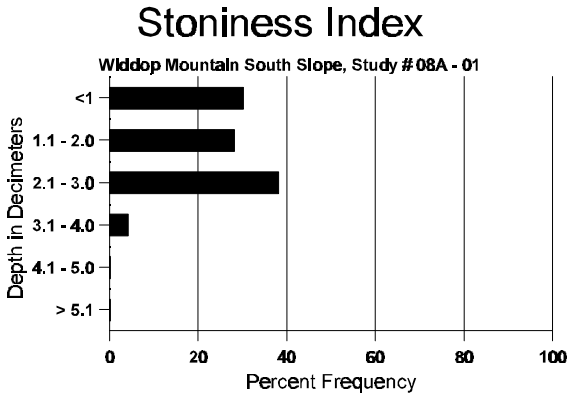
Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Amelanchier alnifolia	6	5	1.06	1.52
B	Artemisia frigida	7	10	.03	.18
B	Artemisia tridentata vaseyana	5	6	.66	1.00
B	Ceratoides lanata	2	1	.00	-
B	Cercocarpus montanus	93	93	21.65	24.07
B	Chrysothamnus depressus	1	0	-	-
B	Chrysothamnus nauseosus hololeucus	0	1	-	-
B	Chrysothamnus viscidiflorus lanceolatus	23	24	.48	.33
B	Eriogonum microthecum	16	12	.12	.34
B	Gutierrezia sarothrae	26	60	.62	1.49
B	Purshia tridentata	1	1	.03	.15
B	Symphoricarpos oreophilus	4	3	.15	.41
B	Tetradymia canescens	34	32	.81	.77
Total for Browse		218	248	25.65	30.29

BASIC COVER --
Herd unit 08A, Study no: 1

Cover Type	Nested Frequency		Average Cover %		
	'95	'00	'88	'95	'00
Vegetation	347	350	8.00	39.14	51.17
Rock	219	163	3.75	6.31	5.54
Pavement	266	257	18.50	13.45	18.63
Litter	388	361	57.00	47.96	43.00
Cryptogams	3	-	0	.00	0
Bare Ground	224	226	12.75	10.57	15.58

SOIL ANALYSIS DATA --
Herd Unit 8A, Study # 1, Study Name: Widdop Mountain South Slope

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
12.83	59.2 (14.25)	6.6	72.0	13.4	14.6	7.0	19.6	208.0	0.6



PELLET GROUP FREQUENCY --
Herd unit 08A, Study no: 1

Type	Quadrat Frequency	
	'95	'00
Rabbit	1	1
Antelope	-	3
Moose	4	-
Elk	40	28
Deer	20	-
Cattle	-	2

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
'00	'00
131	N/A
44	4 (9)
165	9 (23)
853	66 (162)
191	15 (36)
17	2 (4)

BROWSE CHARACTERISTICS --
Herd unit 08A, Study no: 1

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier alnifolia																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	4	-	-	1	-	-	-	-	-	5	-	-	-	100			5
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	1	1	-	2	1	-	-	-	5	-	-	-	100	27	31	5
	00	1	-	1	-	2	-	-	-	-	4	-	-	-	80	20	28	4
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	2	-	-	-	2	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	30%	20%	00%	-40%
'00	33%	50%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'88	0		0%
	'95	200		0%
	'00	120		33%

Artemisia frigida																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	00	1	-	-	2	-	-	-	-	-	3	-	-	-	60			3
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	3	1	-	2	-	-	-	-	-	6	-	-	-	120	3	8	6
	00	10	-	-	1	-	-	-	-	-	11	-	-	-	220	2	6	11

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	14%	00%	00%	+50%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'88	0		-
	'95	140		-
	'00	280		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia nova																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	4	11	0
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'88	00%		00%		00%												
	'95	00%		00%		00%												
	'00	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'88		0	Dec:		-
													'95		0			-
													'00		0			-
Artemisia tridentata vaseyana																		
Y	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	95	-	2	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	3	-	-	-	-	-	-	-	-	3	-	-	-	200	9	15	3
	95	3	1	-	-	-	-	-	-	-	4	-	-	-	80	7	14	4
	00	2	3	-	-	-	-	-	-	-	5	-	-	-	100	8	15	5
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	2	-	-	-	-	-	-	-	1	-	-	1	40			2
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'88	00%		00%		00%									-64%			
	'95	50%		00%		00%									+14%			
	'00	71%		00%		14%												
Total Plants/Acre (excluding Dead & Seedlings)													'88		333	Dec:		0%
													'95		120			0%
													'00		140			29%
Ceratoides lanata																		
M	88	-	1	-	-	-	-	-	-	-	1	-	-	-	66	5	4	1
	95	1	-	-	1	-	-	-	-	-	2	-	-	-	40	6	4	2
	00	-	-	-	-	-	-	1	-	-	1	-	-	-	20	9	11	1
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'88	100%		00%		00%									-39%			
	'95	00%		00%		00%									-50%			
	'00	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'88		66	Dec:		-
													'95		40			-
													'00		20			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus montanus																		
S	88	3	-	-	-	-	-	3	-	-	6	-	-	-	400			6
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
Y	88	12	17	9	5	1	-	13	-	-	56	-	1	-	3800			57
	95	41	15	-	3	-	-	-	-	-	59	-	-	-	1180			59
	00	29	33	10	4	-	-	-	-	-	76	-	-	-	1520			76
M	88	-	12	25	-	1	-	-	-	-	37	-	-	1	2533	26	38	38
	95	3	20	3	-	60	70	-	-	-	93	60	3	-	3120	31	50	156
	00	-	12	26	-	28	89	1	-	-	156	-	-	-	3120	23	37	156
D	88	-	1	5	-	-	-	-	-	-	6	-	-	-	400			6
	95	-	-	-	1	-	-	-	-	-	-	-	-	1	20			1
	00	1	1	7	-	1	16	-	-	-	19	-	-	7	520			26
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	32%	39%	02%	-36%
'95	44%	34%	02%	+16%
'00	29%	57%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	6733	Dec:	6%
	'95	4320		0%
	'00	5160		10%

Chrysothamnus depressus

Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	20		-
	'00	0		-

Chrysothamnus nauseosus hololeucus

M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	0		-
	'00	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus lanceolatus																		
Y	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	8	-	-	-	-	-	-	-	-	8	-	-	-	160			8
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	1	-	-	3	-	-	-	-	-	4	-	-	-	266	10	11	4
	95	31	-	-	2	-	-	-	-	-	33	-	-	-	660	9	12	33
	00	25	-	-	7	-	-	-	-	-	32	-	-	-	640	6	11	32
D	88	-	1	-	-	-	-	-	-	-	-	-	1	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	17%	00%	17%	+51%
'95	00%	00%	00%	-20%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	398	Dec:		17%
'95	820			0%
'00	660			3%

Eriogonum microthecum																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	29	-	-	-	-	-	-	-	-	29	-	-	-	580	4	10	29
	00	18	-	-	1	-	-	-	-	-	19	-	-	-	380	4	7	19
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	-	-	-	1	-	-	1	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	-30%
'00	00%	00%	05%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	0	Dec:		0%
'95	600			0%
'00	420			10%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	12	-	-	-	-	-	-	-	-	12	-	-	-	240			12
Y	88	11	-	-	-	-	-	-	-	-	11	-	-	-	733			11
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
M	88	120	-	-	10	-	-	-	-	-	130	-	-	-	8666	7	5	130
	95	38	-	-	-	-	-	-	-	-	38	-	-	-	760	7	6	38
	00	118	-	-	1	-	-	-	-	-	119	-	-	-	2380	5	8	119
D	88	-	-	-	1	-	-	-	-	-	-	-	-	1	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	3	-	-	-	-	-	-	-	-	2	-	-	1	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	.70%	-92%
'95	00%	00%	00%	+69%
'00	00%	00%	.79%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	9465	Dec:	1%
	'95	780		0%
	'00	2520		2%

Leptodactylon pungens																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	5	8	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	0		-
	'00	0		-

Purshia tridentata																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	-	1	-	-	-	-	-	-	-	-	-	1	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	100%	00%	00%	+ 0%
'00	100%	00%	100%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	20		-
	'00	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	3	-	-	1	-	-	-	-	-	4	-	-	-	80	8	21	4
	00	2	-	-	-	2	-	-	-	-	4	-	-	-	80	9	35	4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	+33%
'00	33%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	80		-
	'00	120		-

Tetradymia canescens																		
S	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	88	2	3	-	1	-	-	-	-	-	6	-	-	-	400			6
	95	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	00	3	-	-	2	-	-	-	-	-	5	-	-	-	100			5
M	88	3	-	-	2	-	-	2	-	-	6	-	1	-	466	7	7	7
	95	51	2	-	7	-	-	-	-	-	60	-	-	-	1200	6	8	60
	00	39	5	2	4	-	-	-	-	-	50	-	-	-	1000	6	10	50
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	6	-	1	-	-	-	-	-	-	5	-	-	2	140			7

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	23%	00%	08%	+32%
'95	03%	00%	00%	- 3%
'00	08%	05%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	866	Dec:	0%
	'95	1280		0%
	'00	1240		11%

Trend Study 8A-2-00

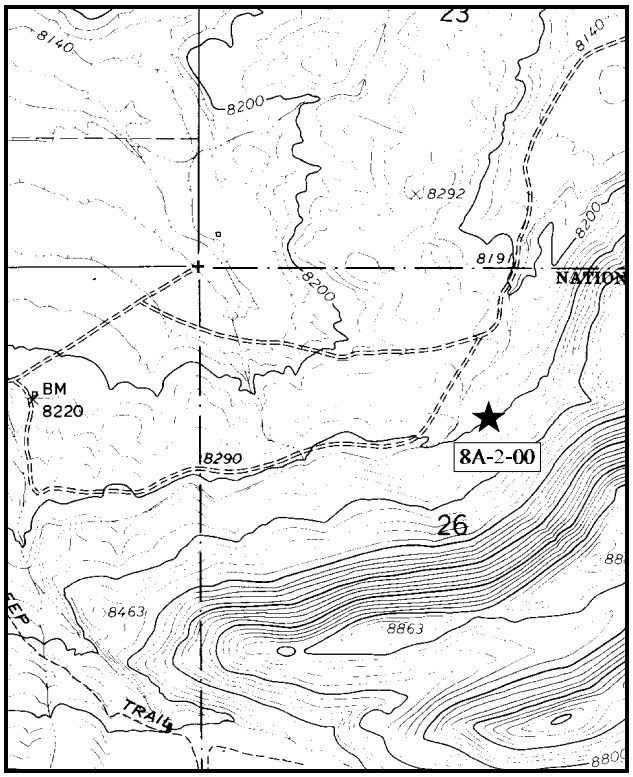
Study site name: Widdop Mountain North Slope . Range type: True Mountain Mahogany .

Compass bearing: frequency baseline 146°M .

First frame placement on frequency belts 5 feet. Frequency belt placement; line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft.), line 4 (71ft).

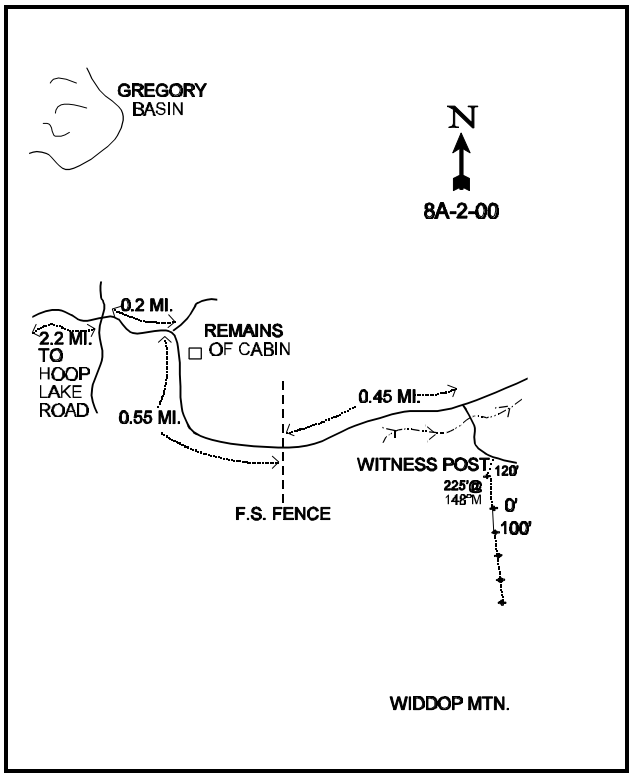
LOCATION DESCRIPTION

Two miles south of the Wyoming-Utah state line, on the Hoop Lake Road along the Middle Fork of Beaver Creek, turn east toward Gregory Basin. Go 0.6 miles to a private property fence. Continue east 1.1 miles, going past a cabin to a fence. Go 0.1 miles to a fork, continue straight. Go 0.4 miles to an old 4-way intersection south of Gregory Basin. Continue straight east 0.2 miles to an old cabin, bear right. Proceed 0.55 miles to the FS boundary fence. Go along the bottom 0.45 miles to a faint fork. Bear right and go across the stream. Continue east 0.l miles towards the base of Widdop Mountain. On the south side of the road, look for a witness post in the sagebrush. The 0-foot baseline stake is 225 feet south of the witness post at 148°M.



Map Name: Hoop Lake

Township 3N , Range 16E , Section 26



Diagrammatic Sketch

UTM 4535338 N, 576248 E

DISCUSSION

Trend Study No. 8A-2

The Widdop Mountain North Slope study is located on the opposite side of the mountain from the previous study (#8A-1). This site on Widdop Mountain also samples a true mountain mahogany type that has a northwest aspect. It is moderately steep at the top, but more gentle towards the bottom where the study is located. The site has a slope of approximately 22% and an elevation of 8,300 feet. Although located on a northerly exposure, this hillside receives considerable use by elk in the winter. Pellet group data from 2000 estimate 44 elk, 3 deer and 12 cow days use/acre (109 edu/ha, 7 ddu/ha and 30 cdu/ha). Quite a few moose also appear to be using this site along with a few antelope. Most of the elk pellet groups appear to be from winter use while moose seem to be using the site more in the spring. There is excellent thermal and escape cover provided by a nearby dense conifer stand.

Soils on the site are moderately deep but variable. Effective rooting depth is estimated at nearly 14 inches, but soil depth varies between 11inches at the bottom of the slope to 16 inches further up the slope at the end of the baseline. The study site begins further up slope where mountain mahogany is found and runs downhill where black sagebrush becomes dominant on more shallow soils at the bottom of the slope. Near the top of the slope there is abundant gravel in the soil profile which becomes small cobble further down. There is also calcium carbonate deposits on the rocks. Soil penetrometer readings suggest that most of the rock is concentrated within the top 8 inches of the soil profile. The soil has a loam texture with a slightly alkaline reactivity (pH of 7.4). It is high in percent organic matter but very low in phosphorus at only 3.4 ppm. Values less than 10 ppm can limit normal plant growth and development. Soil parent material is identical to 8A-1, with both limestone and sandstone. The ground surface is well covered by vegetation and litter leaving little bare ground exposed. Aside from some mild soil pedestaling on the uphill side of shrubs, there is little soil movement or erosion on the site.

The slope is dominated by true mountain mahogany, associated with snowberry, pockets of black sagebrush and occasionally mountain big sagebrush and serviceberry. These secondary browse comprise about 37%-38% of the browse cover and show mostly light to moderate use. Mahogany provides nearly half of the browse cover with a current (‘00) density of 7,360 plants/acre. Mountain mahogany density was estimated at 24,332 plants/acre in 1988. Similar to site #1, the majority of the population consisted of young plants (89%) in 1988, which became established during years of above average precipitation, then thinned out during the extended drought. Mature plants numbered 2,066 plants/acre in 1988 and averaged about 2 feet in height. Twelve percent of the population displayed heavy utilization with generally good vigor. During the 1995 reading, there were an estimated 6,880 plants/acre. The drop in density is primarily from the great reduction in the number of young plants. Changes in density could also be due to the greatly enlarged sample size used beginning in 1992 which more accurately estimates shrub populations. Seedlings also declined from 6,600 in 1988 to 2,440 by 1995 and 1,180 in 2000. The number of mature plants increased from 2,066 plants/acre in 1988, to 3,680 plants/acre in 1995 and 2000. Use is lighter on this site compared to 8A-1 Widdop Mountain South Slope. Use was light to moderate in 1988 increasing to moderate to heavy in 1995. Currently (‘00), 41% of the mahogany is heavily browsed. Some of the increase in heavy use may be due to the poor annual leader growth of only 2.4 inches in 2000. Poor leader growth gives plants the appearance of heavier use than what actually occurred. Even with the heavy use, the mahogany is healthy, vigor is normal and percent decadence is low.

Grasses are diverse and moderately abundant, accounting for nearly 13% cover in 1995 and 15% in 2000. Prominent species include: bluebunch wheatgrass, Carex, mutton bluegrass and needle-and-thread. Forbs are diverse with over 20 species encountered in 1995 and 2000. Common species are low growing forbs like desert phlox, pussytoes, ballhead sandwort and sulfur eriogonum. Desirable species include: yellow Indian paintbrush, Lewis flax and low penstemon.

1995 TREND ASSESSMENT

Even with drought conditions, ground cover characteristics have improved on this site. Percent bare ground has declined from 12% to 6% and percent litter cover has remained steady at 57%. There is more than adequate ground cover to control erosion. Trend for soil is up. The browse trend is stable for most of the palatable species, especially so for the key species, true mountain mahogany. The large numbers of seedlings and young estimated in 1988, were inflated due to above average precipitation in the mid-1980's in conjunction with the much smaller sample size used in 1988. The number of mature plants increased in 1995 and percent decadence remained low at 2%. The number of seedlings and young declined, but they remain at a high level and are adequate to maintain the population. Secondary browse species, serviceberry, black sagebrush, mountain big sagebrush and snowberry provide additional forage. These species generally display stable to improving trends with light to moderate use. The herbaceous trend is mixed. Sum of nested frequency of grasses has remained stable while nested frequency of forbs declined. This is a common trend during dry years. Combined nested frequency for grasses and forbs have declined slightly indicating a slightly downward trend.

TREND ASSESSMENT
soil - up (5)
browse - stable (3)
herbaceous understory - slightly down (2)

2000 TREND ASSESSMENT

Trend for soil is stable even though percent bare ground increased slightly. The ratio of protective cover (vegetation, litter and cryptogams) to bare ground has remained identical to 1995 at 3.8 to 1. Vegetation and litter cover are abundant and well dispersed and erosion is minimal. Trend for the key browse species, mountain mahogany, is also stable. Use is heavier with 41% of the shrubs sampled being heavily browsed. However, vigor is normal and percent decadence is still relatively low. Biotic potential (# of seedlings) has declined from 35% to 16%, but the proportions of young and mature plants have remained similar. Trend for the herbaceous understory is mixed. Sum of nested frequency of perennial grasses has declined slightly, with frequency of perennial forbs declining moderately. This decline is a common trend in the state this year due to the dry conditions. Trend is considered down slightly since forbs and grasses both showed downward trends.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - slightly down due to drought (2)

HERBACEOUS TRENDS --
Herd unit 08A, Study no: 2

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	a-	a-	b7	-	-	3	-	.04
G	Agropyron spicatum	151	154	169	55	61	63	2.74	5.26
G	Bromus inermis	-	3	-	-	2	-	.01	-
G	Carex spp.	a59	b115	b132	32	45	54	2.68	5.48
G	Koeleria cristata	a-	b29	b17	-	13	7	.16	.18
G	Leucopoa kingii	b26	a9	ab18	12	3	8	.04	.43
G	Oryzopsis hymenoides	-	3	3	-	1	2	.15	.03
G	Poa fendleriana	b104	a17	a42	42	7	15	.28	2.90
G	Poa secunda	a-	b32	b37	-	14	15	.14	.25
G	Stipa comata	a174	a148	b43	63	53	18	6.46	.67
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		514	510	468	204	199	185	12.69	15.27
Total for Grasses		514	510	468	204	199	185	12.69	15.27
F	Allium spp.	-	3	-	-	1	-	.00	-
F	Antennaria rosea	a17	b39	ab22	7	16	10	.25	.29
F	Androsace septentrionalis (a)	-	1	2	-	1	1	.00	.00
F	Arabis spp.	b33	b23	a5	18	12	2	.08	.03
F	Arenaria congesta	a96	a101	b58	42	44	25	1.25	.54
F	Astragalus convallarius	a-	a3	b10	-	1	6	.03	.15
F	Astragalus spp.	17	25	14	10	11	8	.20	.06
F	Castilleja flava	b21	ab10	a6	12	7	3	.11	.04
F	Calochortus nuttallii	a-	b5	a-	-	4	-	.02	-
F	Chenopodium leptophyllum (a)	-	b8	a-	-	3	-	.01	-
F	Crepis acuminata	b5	a-	a-	4	-	-	-	-
F	Cruciferae	2	-	-	1	-	-	-	-
F	Cryptantha spp.	ab4	a-	b8	2	-	5	-	.05
F	Descurainia pinnata (a)	-	-	5	-	-	2	-	.01
F	Erigeron eatonii	b90	a32	a22	39	16	12	.08	.11
F	Eriogonum umbellatum	b24	ab25	b49	12	12	22	.62	.68
F	Heuchera parvifolia	b8	ab1	a-	5	1	-	.03	-
F	Hymenoxys acaulis	-	7	3	-	2	1	.03	.15
F	Lesquerella spp.	b46	a8	ab23	23	7	15	.03	.12
F	Linum lewisii	2	10	5	1	5	3	.10	.07
F	Lupinus spp.	b21	a-	a-	10	-	-	-	-
F	Lychnis drummondii	-	2	3	-	1	1	.00	.00
F	Machaeranthera canescens	a-	b8	b6	-	4	3	.19	.18

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
F	Machaeranthera grindelioides	-	-	1	-	-	1	-	.03
F	Penstemon humilis	$_{b}$92	$_{b}$90	$_{a}$39	44	38	20	1.05	.64
F	Penstemon spp.	-	3	-	-	1	-	.00	-
F	Petradoria pumila	$_{b}$3	$_{a}$-	$_{a}$-	3	-	-	-	-
F	Phlox austromontana	144	133	113	57	57	44	3.98	3.90
F	Phlox longifolia	$_{b}$143	$_{a}$75	$_{a}$70	55	36	32	.40	.58
F	Potentilla gracilis	$_{a}$-	$_{b}$21	$_{b}$14	-	11	6	.08	.05
F	Sedum lanceolatum	-	-	1	-	-	1	-	.03
F	Senecio multilobatus	$_{a}$-	$_{a}$-	$_{b}$7	-	-	4	-	.09
F	Taraxacum officinale	-	1	-	-	1	-	.00	-
F	Zigadenus paniculatus	36	32	32	17	19	15	.12	.14
Total for Annual Forbs		0	9	7	0	4	3	0.01	0.01
Total for Perennial Forbs		804	657	511	362	307	239	8.70	7.98
Total for Forbs		804	666	518	362	311	242	8.72	8.00

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --
Herd unit 08A, Study no: 2

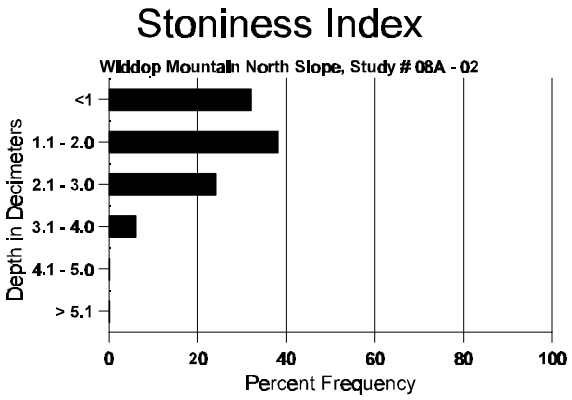
Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Amelanchier utahensis	21	29	1.14	1.81
B	Artemisia nova	40	25	1.20	.97
B	Artemisia tridentata vaseyana	3	8	.41	.66
B	Cercocarpus montanus	97	97	19.55	19.04
B	Chrysothamnus viscidiflorus lanceolatus	80	73	3.75	3.28
B	Eriogonum microthecum	80	78	2.24	3.62
B	Gutierrezia sarothrae	23	16	.11	.39
B	Mahonia repens	1	2	-	.03
B	Symphoricarpos oreophilus	82	85	13.37	12.45
B	Tetradymia canescens	26	27	.34	.45
Total for Browse		453	440	42.15	42.73

BASIC COVER --
Herd unit 08A, Study no: 2

Cover Type	Nested Frequency		Average Cover %		
	'95	'00	'88	'95	'00
Vegetation	359	354	12.75	53.54	60.28
Rock	159	65	2.75	2.89	1.05
Pavement	166	163	15.25	3.31	7.23
Litter	397	383	57.25	57.47	59.54
Cryptogams	25	23	0	.15	.33
Bare Ground	205	198	12.00	6.32	13.68

SOIL ANALYSIS DATA --
Herd Unit 8A, Study # 2, Study Name: Widdop Mountain North Slope

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
13.84	57.6 (15.83)	7.4	43.3	34.2	22.6	5.5	3.4	115.2	0.9



PELLET GROUP FREQUENCY --
Herd unit 08A, Study no: 2

Type	Quadrat Frequency	
	'95	'00
Antelope	-	14
Moose	8	-
Elk	19	17
Deer	4	1
Cattle	-	1

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
'00	'00
139	12 (29)
278	16 (38)
574	44 (109)
44	3 (8)
139	12 (29)

BROWSE CHARACTERISTICS --
Herd unit 08A, Study no: 2

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
S	88	1	-	-	-	-	-	1	-	-	2	-	-	-	133			2
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
Y	88	4	1	-	2	-	-	-	-	-	6	-	1	-	466			7
	95	6	6	-	4	-	-	-	-	-	16	-	-	-	320			16
	00	7	5	-	1	2	-	2	-	-	17	-	-	-	340			17
M	88	-	-	1	-	-	-	-	-	-	1	-	-	-	66	39	31	1
	95	-	1	-	5	7	2	-	-	-	15	-	-	-	300	39	42	15
	00	3	3	1	1	2	3	1	-	-	14	-	-	-	280	28	22	14
D	88	-	-	1	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	1	-	-	1	-	-	-	1	-	-	1	40			2
	00	1	-	3	-	1	1	-	-	-	5	-	-	1	120			6
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	11%	22%	11%	+ 9%
'95	42%	12%	03%	+11%
'00	35%	22%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	598	Dec:		11%
'95	660			6%
'00	740			16%

Artemisia frigida

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
M	88	3	-	-	1	-	-	-	-	-	3	-	1	-	266	5	4	4
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	25%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	266	Dec:		-
'95	0			-
'00	0			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia nova																		
S	88	19	-	-	-	-	-	-	-	-	19	-	-	-	1266			19
	95	9	-	-	2	-	-	-	-	-	11	-	-	-	220			11
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	88	25	1	-	2	-	-	-	-	-	9	17	2	-	1866			28
	95	7	4	-	3	-	-	-	-	-	14	-	-	-	280			14
	00	10	-	-	-	-	-	-	-	-	10	-	-	-	200			10
M	88	33	2	-	3	-	-	1	-	-	38	1	-	-	2600	10	7	39
	95	35	20	1	13	-	-	-	-	-	69	-	-	-	1380	8	13	69
	00	49	1	-	-	-	1	1	-	-	52	-	-	-	1040	9	14	52
D	88	12	1	-	-	-	-	-	-	-	11	-	2	-	866			13
	95	3	-	-	1	-	-	-	-	-	3	-	-	1	80			4
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	160			8
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	160			8

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	05%	00%	05%	-67%
'95	28%	01%	01%	-26%
'00	02%	02%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	5332	Dec:	16%
	'95	1740		5%
	'00	1280		3%

Artemisia tridentata vaseyana																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	1	-	3	-	-	-	-	-	4	-	-	-	80	12	11	4
	00	6	-	-	-	-	-	-	-	-	6	-	-	-	120	15	20	6
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	25%	00%	00%	+50%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	0%
	'95	80		0%
	'00	160		13%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus montanus																		
S	88	36	-	2	47	-	-	14	-	-	98	-	1	-	6600			99
	95	72	3	7	40	-	-	-	-	-	122	-	-	-	2440			122
	00	54	-	-	5	-	-	-	-	-	59	-	-	-	1180			59
Y	88	146	59	22	45	1	-	52	-	-	323	-	2	-	21666			325
	95	59	42	8	40	4	-	-	-	-	153	-	-	-	3060			153
	00	56	40	4	30	10	4	17	-	-	161	-	-	-	3220			161
M	88	2	9	20	-	-	-	-	-	-	31	-	-	-	2066	25	18	31
	95	3	18	21	15	93	34	-	-	-	184	-	-	-	3680	26	37	184
	00	6	36	57	8	9	68	-	-	-	184	-	-	-	3680	22	30	184
D	88	3	3	2	-	-	-	1	-	-	8	-	1	-	600			9
	95	-	-	-	-	4	3	-	-	-	6	-	-	1	140			7
	00	1	3	7	-	1	11	-	-	-	16	-	-	7	460			23
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	20%	12%	.82%	-72%
'95	47%	19%	.29%	+ 7%
'00	27%	41%	02%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	24332	Dec:		2%
'95	6880			2%
'00	7360			6%

Chrysothamnus viscidiflorus lanceolatus																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	88	31	1	-	1	-	-	-	-	-	28	1	4	-	2200			33
	95	9	-	-	2	-	-	-	-	-	11	-	-	-	220			11
	00	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	88	21	-	-	2	-	-	4	-	-	27	-	-	-	1800	11	9	27
	95	161	-	-	33	-	-	-	-	-	194	-	-	-	3880	12	14	194
	00	117	2	-	18	-	-	2	-	-	139	-	-	-	2780	10	11	139
D	88	-	-	-	-	-	-	1	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	5	1	-	1	-	-	-	-	-	4	-	-	3	140			7

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	02%	00%	07%	-21%
'95	00%	00%	00%	- 6%
'00	02%	00%	02%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	4066	Dec:		2%
'95	4100			0%
'00	3020			5%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Eriogonum microthecum																		
S	88	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	95	7	-	-	2	-	-	-	-	-	9	-	-	-	180			9
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	88	55	-	-	7	-	-	1	-	-	37	-	25	1	4200			63
	95	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	00	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
M	88	71	2	-	14	-	-	5	-	-	92	-	-	-	6133	6	7	92
	95	219	2	-	23	-	5	-	-	-	249	-	-	-	4980	8	11	249
	00	146	6	-	31	-	-	-	-	-	181	-	2	-	3660	7	11	183
D	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	-	-	-	-	-	-	2	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	01%	00%	17%	-52%
'95	.79%	02%	00%	-23%
'00	03%	00%	02%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	10466	Dec:	1%
	'95	5060		0%
	'00	3880		1%

Gutierrezia sarothrae																		
S	88	6	-	-	-	-	-	-	-	-	6	-	-	-	400			6
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	88	23	-	-	1	-	-	-	-	-	24	-	-	-	1600			24
	95	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	44	-	-	1	-	-	-	-	-	45	-	-	-	3000	5	3	45
	95	29	-	-	1	-	-	-	-	-	30	-	-	-	600	6	5	30
	00	21	-	-	-	-	-	-	-	-	21	-	-	-	420	6	7	21
D	88	2	-	-	-	-	-	-	-	-	1	-	1	-	133			2
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	01%	-84%
'95	00%	00%	00%	-43%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	4733	Dec:	3%
	'95	740		0%
	'00	420		0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Mahonia repens																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60	5	4	3
	00	6	-	-	-	-	-	-	-	-	6	-	-	-	120	3	6	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	+50%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	60		-
	'00	120		-

Pediocactus simpsonii																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	4	4	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	0		-
	'00	0		-

Pseudotsuga menziesii																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	0		-
	'00	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
S	88	4	1	-	1	-	-	-	-	-	6	-	-	-	400			6
	95	4	-	-	5	-	-	-	-	-	9	-	-	-	180			9
	00	6	-	-	2	-	-	-	-	-	8	-	-	-	160			8
Y	88	23	7	-	1	-	-	2	-	-	32	-	1	-	2200			33
	95	25	2	3	9	-	-	3	-	-	42	-	-	-	840			42
	00	13	-	-	2	-	-	-	-	-	15	-	-	-	300			15
M	88	33	2	-	4	-	-	-	-	-	38	-	1	-	2600	11	10	39
	95	126	12	6	70	1	-	-	-	-	215	-	-	-	4300	12	31	215
	00	120	3	-	52	1	-	7	-	-	165	1	17	-	3660	11	25	183
D	88	12	-	3	2	-	-	-	-	-	14	-	-	3	1133			17
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	3	-	-	3	-	-	-	-	-	3	-	-	3	120			6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	10%	03%	06%	-13%
'95	06%	04%	00%	-21%
'00	02%	00%	10%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	5933	Dec:	19%
	'95	5140		0%
	'00	4080		3%

Tetradymia canescens																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	88	25	1	-	-	-	-	-	-	-	26	-	-	-	1733			26
	95	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
	00	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	88	12	3	-	2	-	-	-	-	-	17	-	-	-	1133	11	6	17
	95	25	7	-	6	-	-	-	-	-	38	-	-	-	760	9	9	38
	00	26	2	-	-	-	-	1	-	-	29	-	-	-	580	7	8	29
D	88	1	-	-	-	-	-	1	-	-	2	-	-	-	133			2
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	4	-	-	-	-	-	-	-	4	-	-	1	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	09%	00%	00%	-71%
'95	16%	00%	00%	-11%
'00	15%	00%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	2999	Dec:	4%
	'95	880		0%
	'00	780		13%

Trend Study 8A-3-00

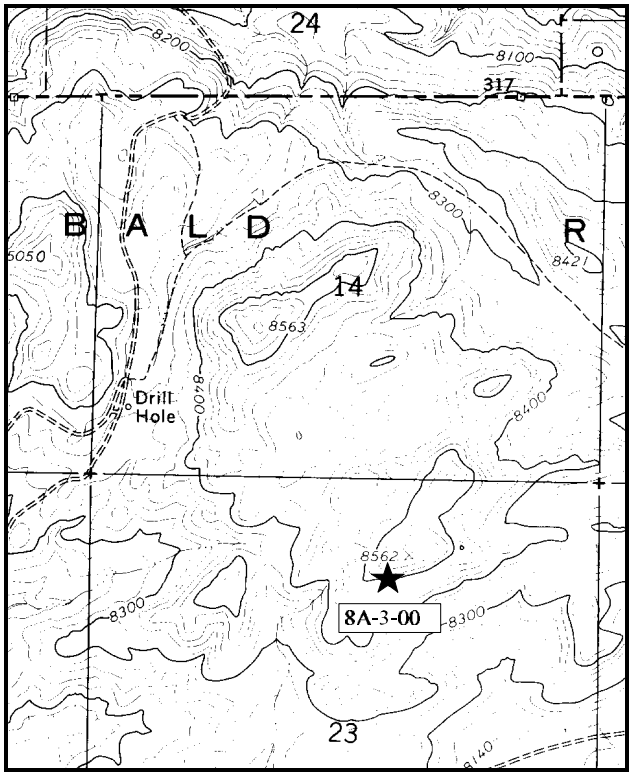
Study site name: Bald Range South . Range type: True Mountain Mahogany .

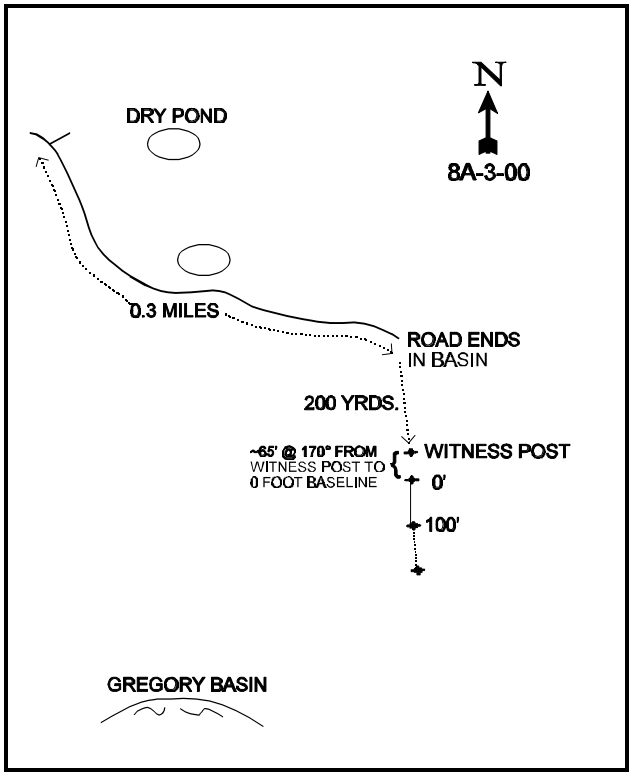
Compass bearing: frequency baseline 155°M .

First frame placement on frequency belts 5 feet. Frequency belt placement; line 1 (11, 59, & 95ft), line 2 (34, & 71ft).

LOCATION DESCRIPTION

From the Bald Range study 8A-4, proceed southeasterly across the basin, past another dry pond, for about 0.3 miles to where the road ends. From the end of the road, walk about 200 yards up the ridge to the south (it is also possible to drive up) to the top. A witness post is located on the rocky top. The study is on the south-facing slope. Walk 13 paces at 170°M to the 0-foot baseline stake.





Map Name: Hoop Lake Diagrammatic Sketch

Township 3N , Range 16E , Section 23 UTM 4537129 N, 576277 E

DISCUSSION

Trend Study No. 8A-3

*** This site was not read in 2000, but text has been retained. Consult the 1995 "Utah Big Game Range Trend Studies" report for maps and data tables.

The Bald Range South range study is located on the appropriately named Bald Range consists of low, rolling sagebrush/grass hills with patches of mountain brush mostly on south slopes. It is located less than ½ of a mile south of trend study 8A-4, Bald Range. The open range, owned by the State of Utah, is mostly utilized by cattle and antelope. The mountain mahogany slopes also appear to be important to wintering elk. There was only light cattle use on the study site, which is located on a steep (42%), south-facing slope overlooking Gregory Basin. Elevation on the ridge, one of the highest in the range, is just over 8,500 feet.

The soil surface is extremely rocky. A large number of rocks occur with the soil profile, resulting in variable soil depth. Black sagebrush thrives on the more shallow soils. Vegetative and litter cover are generally good, but rock and smaller pavement fragments cover 36% of the surface. Total protective ground cover is good at 94%, leaving only 6% bare soil. Soil erosion is not currently a problem on this slope, yet soil movement down slope in the form of pedestaling on the uphill side of shrubs is evident due to the steep slope.

True mountain mahogany dominates the slopes and makes up 70% of the total browse cover. Estimated density was 7,066 plants/acre in 1988 and 5,740 in 1995. Sixty-six percent of the population consisted of young plants in 1988, a high proportion similar to many of the mahogany sites in the unit. Mature plants averaged just over two feet in height with 73% of them displaying heavy hedging in 1988. Vigor was good and percent decadency low at 2%. During the 1995 reading, there were an estimated 3,720 mature plants/acre, with 30% being classified as heavily hedged. The number of seedlings and young are lower than in 1988, but adequate to maintain the population. The population change is mostly due to the greatly increased sample size and much better sampling distribution used in 1995 and a die-off of the young age class plants due to drought.

Other valuable browse include serviceberry, black sagebrush, and snowberry. Mature serviceberry average nearly three feet in height. These shrubs are lightly to moderately utilized. Patches of black sagebrush are common and showed more heavy use in 1995. Currently, 30% of the mature and decadent plants display heavy use. Percent decadency has declined from 31% to 14%. Snowberry accounts for 10% of the browse cover on the site. With the new larger sample used in 1995, more snowberry was picked up than during the previous reading. Currently, there is an estimated 700 mostly mature plants/acre, 23% of which are heavily utilized.

Increasers have tough competition from a well established grass understory. Bluebunch wheatgrass, Carex, and Sandberg bluegrass are common and vigorous. They have been lightly grazed by cattle. Forbs are diverse and moderately abundant, but contain few valuable forage species.

1995 TREND ASSESSMENT

Protective ground cover has increased slightly on the site from 93% to 94%. Litter cover has declined due to drought while rock and pavement cover have remained stable at 36%. Active erosion is not a problem on the site, but some down slope soil movement is evident and unavoidable on the site this steep. Trend for soil is currently stable. Trend for the key browse species, true mountain mahogany, is slightly up even with the decline in population density which is more of a reflection of a much larger sample size. The number of seedlings and young are lower, but still excellent and adequate to maintain the population. Percent decadency is less than 1%, and the proportion of mature shrubs heavily hedged declined from 73% to 30%. Secondary browse species, serviceberry, black sagebrush, and snowberry, all exhibit heavier use, yet show stable population trends. Trends

for perennial grasses and forbs are both down slightly due to reduced sum of nested frequencies. All grasses, except Indian ricegrass and Sandberg bluegrass, declined in quadrat and nested frequency. Forbs are diverse but contain only a few useful species.

TREND ASSESSMENT
soil - stable (3)
browse - slightly up (4)
herbaceous understory - slightly down with continued drought (2)

Trend Study 8A-4-00

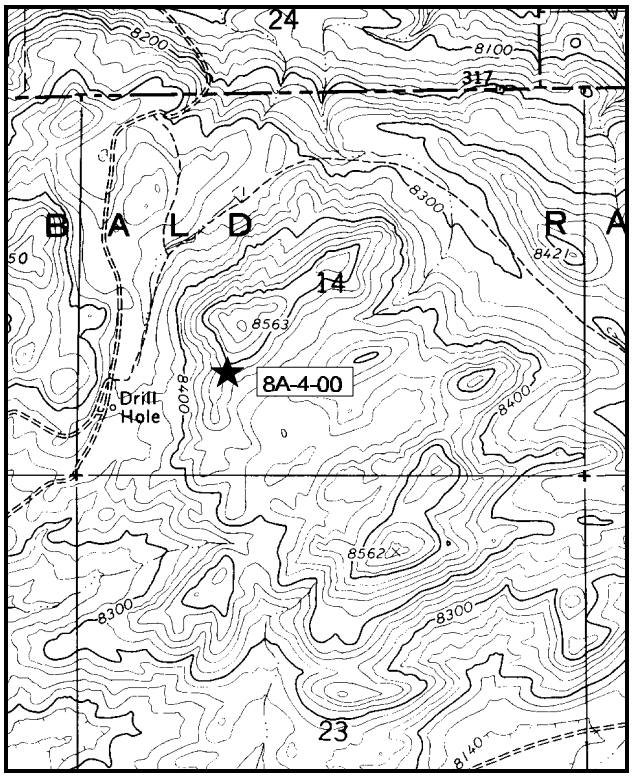
Study site name: Bald Range . Range type: True Mountain Mahogany .

Compass bearing: frequency baseline 158°M .

First frame placement on frequency belts 5 feet. Frequency belt placement; line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft.), line 4 (71ft).

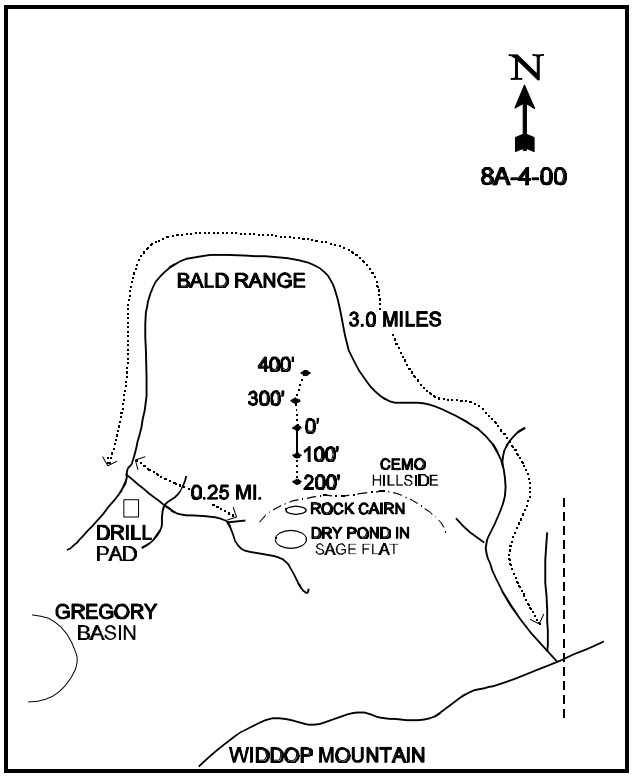
LOCATION DESCRIPTION

From the Hoop Lake-Beaver Creek Road, turn off east towards Gregory Basin. Go 0.6 miles to a gate onto private land. Continue past the cabins for 1.1 miles to a fence. Go along a canal 0.5 miles to the 4-way intersection. Proceed east 0.7 miles to a cattle guard at the boundary, and 0.9 miles more to the eastern FS boundary fence. Continue 1.8 miles to another fence. Just on the west side of the fence, make a 45° turn to the left and follow the jeep road NW up the drainage about 0.5 miles to a fork at the top. Continue on the main jeep road 2.55 miles to an old drill pad. Just past the pad, turn left onto a faint road that goes east about 0.25 miles to the top of a ridge. From the ridge, walk about 0.1 miles along the edge of the sage and mahogany to a rock cairn. From there it is 13 paces north to the 200 foot baseline stake. The 0-foot baseline stake is marked by browse tag #9076.



Map Name: Hoop Lake

Township 3N , Range 16E , Section 14



Diagrammatic Sketch

UTM 4537733 N, 575817 E

DISCUSSION

Trend Study No. 8A-4

The Bald Range trend study is located less than ½ mile northwest of the Bald Range South study (8A-3). It also samples a south-facing mountain mahogany slope. Due to the close proximity of these two sites, Bald Range South (8A-3) was dropped and Bald Range (8A-4) was retained. The Bald Range trend study is more representative of the area. At the time the study was established ('88), the area was exceptionally dry. Water often limits livestock grazing in the area. Cattle use this state land in the spring when the nearby stock ponds contain water. Elk sign is concentrated on the rocky, windswept ridges where they bed down. The mahogany type provides the bulk of the forage. There is little deer sign because the high elevation (8,470 feet) is not suited for deer winter range. Pellet group data from 2000 estimate 40 elk days use/acre (99 edu/ha). About 10% of the pellet groups encountered were from spring use with all of the others appearing to be from fall and winter. Antelope also use the area and some were seen near the site in 2000.

The slope is moderately steep at about 22%. The soil is moderately shallow and rocky with an effective rooting depth of just over 9 inches. It has a sandy loam texture with a slightly alkaline pH and a high percentage of rock and gravel on the surface and throughout the profile. A hard pan layer is found at 6" to 8" in depth. The surface soil is loose and easily disturbed. Trampling can have deleterious effects, with recurrent open interspaces that lack litter and vegetative cover displaying noticeable erosion. Phosphorus is limited at just 3.6 ppm. Values less than 10 ppm can limit normal plant growth and development.

True mountain mahogany is the key browse species. It provided 80% of the browse cover in 1995 and 82% in 2000. Population density was estimated at 5,599 plants/acre in 1988. Similar to other mahogany sites in the area, the proportion of young plants in the population was high in 1988 at 55%. Use was moderate to heavy. Density declined in 1995 due to a reduction in young plants, but use was more moderate and vigor normal on most plants. Changes in density are also likely due to the greatly enlarged sample size used in 1995 which more accurately estimates shrub populations. Density has remained stable in 2000 at 3,560 plants/acre. Use is heavy on 69% of the plants sampled. The population is healthy however, with young plants accounting for 21% of the population, vigor normal on most plants and percent decadence is relatively low at 7%. Some of the heavy use may be partly due to the poor leader growth in 2000. Average annual leader growth of mahogany was only 1.2 inches. This lack of leader growth often gives shrubs a heavily hedged growth form.

Other desirable browse are limited to a few scattered serviceberry, a moderate population of black sagebrush, and a small number of snowberry. The population of black sagebrush did not show much evidence of use in 1988, but did demonstrate more moderate use in 1995. Currently ('00) use is mostly light. The large increase in population density of black sagebrush between 1988 and 1995 is due to the much larger sample size in 1995. Broom snakeweed was very common in 1988 and appeared to be increasing. This short lived shrub declined considerably during the following drought years and now has a population density of only 800 plants/acre.

Grass composition is very similar to other mahogany sites on the unit. The dominant grasses include: bluebunch wheatgrass, a Carex, Indian ricegrass and thickspike wheatgrass. Nested frequency of bluebunch wheatgrass and Carex increased significantly between 1988 and 1995. Both of these species decreased in 2000 but the change was not significant. Indian ricegrass has significantly declined in nested frequency with each reading. Carex was heavily utilized in 2000. All the other grasses displayed poor seed production due to the dry conditions. Forbs are diverse but contain only a few useful species. The dominant forbs include low growing species like sulfur eriogonum, low penstemon and desert phlox. Many of the forbs encountered in 2000, were already dried up by August 1st due to the extremely dry conditions.

1995 TREND ASSESSMENT

Basic ground cover characteristics have improved slightly on the site. Protective ground cover has increased, although litter cover declined slightly which is typical for an extended drought. Trend for soil is considered stable. Trend for the key browse species, true mountain mahogany, is stable. Biotic potential (# seedlings) has increased while the number of young plants has declined. Young plants are still abundant and adequate to maintain the stand. The extremely high number of young plants sampled in 1988, appear to have established during the wet years of 1983-84. They are now declining in number with a return to drier conditions. The number of young in the population also may have been overestimated with the smaller sample size used in 1988. The number of decadent mahogany has declined from 18% to 1% with the proportion of shrubs displaying heavy use decreasing from 45% to 25%. The less preferred browse species, black sagebrush, displays a stable population trend. Another positive factor in the trend is the significant decline in the population of broom snakeweed. The herbaceous understory is very similar to other sites in the unit. Grass composition is good, while forbs contain several low growing weedy species. Sum of nested frequency for grasses increased slightly, while sum of nested frequency for perennial forbs declined. Combined sum of nested frequency for grasses and forbs declined slightly, but not enough to suggest a downward trend since the decline is due to forbs which provide only 26% of the total herbaceous cover. Trend for the herbaceous understory is considered stable.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

2000 TREND ASSESSMENT

Trend for soil is still considered stable. Percent bare ground has increased, but the ratio of protective ground cover to bare ground has remained similar to 1995. There is little erosion occurring on the site. Trend for the key browse species, true mountain mahogany, is stable. There is more heavy use, yet vigor is normal on most plants, percent decadence is low at only 7%, and young plants account for 21% of the population. Sum of nested frequency of perennial grasses declined slightly, while frequency of forbs remained stable. Nested frequency of thickspike wheatgrass increased significantly, with bluebunch wheatgrass and Carex declining slightly but not significantly. Sum of nested frequency for Indian ricegrass continued to decline significantly and is now found in only 3 quadrats. Desert phlox has remained stable while the preferred low penstemon declined significantly in nested frequency. Weighing all of these factors, trend for the herbaceous understory is considered down slightly.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --
Herd unit 08A, Study no: 4

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	a37	a50	b106	17	20	37	.44	1.18
G	Agropyron spicatum	a158	b217	ab187	64	80	69	3.98	6.72
G	Carex spp.	a94	b136	ab123	43	58	53	3.55	5.14
G	Koeleria cristata	b54	a22	a1	27	9	1	.22	.00
G	Leucopoa kingii	a-	a-	b9	-	-	4	-	.33
G	Oryzopsis hymenoides	c96	b65	a5	40	33	3	1.89	.18
G	Poa fendleriana	a-	b8	b13	-	4	5	.04	.36
G	Poa secunda	27	19	10	13	9	5	.17	.07
G	Stipa comata	b49	ab27	a19	23	13	8	.22	.96
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		515	544	473	227	226	185	10.53	14.98
Total for Grasses		515	544	473	227	226	185	10.53	14.98
F	Antennaria rosea	13	8	5	5	4	2	.21	.03
F	Arabis spp.	2	3	-	1	2	-	.01	-
F	Arenaria congesta	a-	a-	b14	-	-	6	-	.20
F	Astragalus spp.	a5	b51	a7	3	24	4	.64	.05
F	Calochortus nuttallii	-	1	-	-	1	-	.00	-
F	Chenopodium leptophyllum (a)	-	b10	a-	-	5	-	.05	-
F	Cirsium spp.	b26	ab12	a15	13	6	6	.11	.10
F	Cryptantha spp.	-	1	3	-	1	1	.03	.00
F	Descurainia pinnata (a)	-	b78	a-	-	31	-	.31	-
F	Eriogonum umbellatum	a-	b8	c61	-	3	25	.09	1.48
F	Haplopappus acaulis	a7	ab15	b24	3	7	12	.37	.57
F	Hackelia patens	a-	a-	b7	-	-	3	-	.33
F	Heterotheca villosa	-	-	1	-	-	1	-	.00
F	Hymenoxys acaulis	a-	b6	ab5	-	3	2	.04	.03
F	Hymenoxys richardsonii	-	-	3	-	-	1	-	.15
F	Ipomopsis aggregata	4	-	-	2	-	-	-	-
F	Lappula occidentalis (a)	-	1	-	-	1	-	.00	-
F	Lesquerella alpina	b45	c76	a5	23	37	3	.23	.01
F	Leucelene ericoides	-	1	1	-	1	1	.00	.00
F	Lepidium spp. (a)	-	3	-	-	1	-	.00	-
F	Lithospermum ruderale	a-	b6	ab2	-	3	1	.01	.03
F	Machaeranthera canescens	a-	a-	b8	-	-	4	-	.04
F	Machaeranthera grindelioides	6	6	10	3	4	4	.09	.09
F	Penstemon humilis	c150	b79	a37	71	41	18	.50	.31

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
F	Phlox hoodii	61	75	64	24	32	26	1.21	1.27
F	Phlox longifolia	$_{c}$77	$_{a}$-	$_{b}$28	32	-	10	-	.05
F	Senecio multilobatus	$_{a}$3	$_{a}$-	$_{b}$12	1	-	6	-	.03
F	Trifolium dasyphyllum	$_{b}$37	$_{a}$-	$_{b}$31	16	-	15	-	.61
F	Zigadenus paniculatus	$_{b}$65	$_{a}$31	$_{a}$18	32	17	9	.16	.21
Total for Annual Forbs		0	92	0	0	38	0	0.37	0
Total for Perennial Forbs		501	379	361	229	186	160	3.74	5.67
Total for Forbs		501	471	361	229	224	160	4.11	5.67

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --
Herd unit 08A, Study no: 4

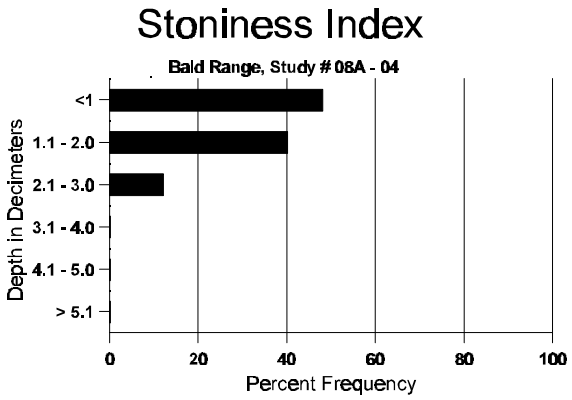
Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Amelanchier alnifolia	1	1	-	-
B	Artemisia frigida	3	0	.03	-
B	Artemisia nova	58	54	3.34	1.33
B	Cercocarpus montanus	82	79	21.40	16.20
B	Chrysothamnus viscidiflorus lanceolatus	27	33	.54	.80
B	Eriogonum microthecum	2	9	-	.06
B	Leptodactylon pungens	17	22	-	-
B	Pediocactus simpsonii	0	1	-	-
B	Gutierrezia sarothrae	0	1	.40	.10
B	Symphoricarpos oreophilus	23	20	.93	1.19
B	Tetradymia canescens	13	11	.18	.15
Total for Browse		226	231	26.84	19.86

BASIC COVER --
Herd unit 08A, Study no: 4

Cover Type	Nested Frequency		Average Cover %		
	'95	'00	'88	'95	'00
Vegetation	326	325	6.75	35.36	39.93
Rock	253	212	2.75	8.05	6.74
Pavement	291	301	27.50	15.50	16.87
Litter	385	362	46.00	39.70	36.90
Cryptogams	7	8	0	.21	.07
Bare Ground	281	294	17.00	13.14	22.08

SOIL ANALYSIS DATA --
Herd Unit 8A, Study # 4, Study Name: Bald Range

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
9.39	65.6 (11.10)	7.5	58.4	24.1	17.6	3.3	3.6	112.0	0.9



PELLET GROUP FREQUENCY --
Herd unit 08A, Study no: 4

Type	Quadrat Frequency	
	'95	'00
Rabbit	1	-
Elk	21	24
Deer	8	2
Cattle	2	1
Moose	-	-

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
'00	'00
-	-
522	40 (99)
-	-
26	2 (5)
44	3 (8)

BROWSE CHARACTERISTICS --
Herd unit 08A, Study no: 4

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier alnifolia																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	1	-	-	-	-	-	-	-	1	-	-	-	20	20	34	1
	00	-	1	-	-	-	-	-	-	-	-	-	1	-	20	31	62	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	100%	00%	00%	+ 0%
'00	100%	00%	100%	

Total Plants/Acre (excluding Dead & Seedlings)			
'88	0	Dec:	-
'95	20		-
'00	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia frigida																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66	1	5	1
	95	2	-	-	3	-	-	-	-	-	5	-	-	-	100	2	5	5
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	+34%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'88	66	Dec:	-
'95	100		-
'00	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia nova																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	00	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
Y	88	5	-	-	1	-	-	1	-	-	7	-	-	-	466			7
	95	1	1	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	11	-	-	-	-	-	-	-	-	11	-	-	-	220			11
M	88	3	-	-	-	-	-	-	-	-	3	-	-	-	200	9	8	3
	95	44	31	7	17	6	-	-	-	-	105	-	-	-	2100	8	14	105
	00	77	4	1	7	-	-	2	-	-	90	1	-	-	1820	6	12	91
D	88	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	95	6	1	-	-	1	-	-	-	-	3	-	-	5	160			8
	00	13	2	-	-	-	-	-	-	-	10	-	-	5	300			15
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	120			6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	+62%
'95	35%	06%	04%	+ 2%
'00	05%	.85%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	866	Dec:		23%
'95	2300			7%
'00	2340			13%

Cercocarpus montanus																		
S	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	4	-	-	12	-	-	-	-	-	16	-	-	-	320			16
	00	8	-	-	-	-	-	-	-	-	8	-	-	-	160			8
Y	88	15	26	5	-	-	-	-	-	-	46	-	-	-	3066			46
	95	6	11	2	21	1	-	-	-	-	41	-	-	-	820			41
	00	13	9	16	-	-	-	-	-	-	38	-	-	-	760			38
M	88	-	4	19	-	-	-	-	-	-	23	-	-	-	1533	24	27	23
	95	-	9	1	-	77	38	-	-	-	97	4	24	-	2500	29	48	125
	00	-	15	82	1	9	20	-	-	-	121	3	3	-	2540	29	44	127
D	88	-	1	14	-	-	-	-	-	-	11	-	3	1	1000			15
	95	-	-	-	-	-	1	-	-	-	1	-	-	-	20			1
	00	2	1	3	-	5	2	-	-	-	8	-	4	1	260			13
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	37%	45%	05%	-40%
'95	59%	25%	14%	+ 6%
'00	22%	69%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	5599	Dec:		18%
'95	3340			1%
'00	3560			7%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus lanceolatus																		
Y	88	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	88	4	-	-	-	-	-	1	-	-	5	-	-	-	333	7	10	5
	95	32	-	-	8	-	-	-	-	-	40	-	-	-	800	10	16	40
	00	45	2	-	3	-	-	-	-	-	46	-	4	-	1000	6	10	50
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	6	-	-	4	-	-	-	-	-	6	-	-	4	200			10

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	+17%
'95	00%	00%	00%	+34%
'00	03%	00%	13%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	666	Dec:		0%
'95	800			0%
'00	1220			16%

Eriogonum microthecum																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	1	-	-	1	-	-	-	-	-	2	-	-	-	40	8	14	2
	00	23	-	-	-	-	-	-	-	-	23	-	-	-	460	6	9	23

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	+93%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'88	0	Dec:	-
'95	40		-
'00	600		-

Gutierrezia sarothrae																		
Y	88	32	-	-	-	-	-	-	-	-	32	-	-	-	2133			32
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	88	256	-	-	-	-	-	-	-	-	256	-	-	-	17066	6	6	256
	95	22	-	-	-	-	-	-	-	-	22	-	-	-	440	5	6	22
	00	38	-	-	1	-	-	-	-	-	37	-	2	-	780	5	6	39

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	-97%
'95	00%	00%	00%	+40%
'00	00%	00%	05%	

Total Plants/Acre (excluding Dead & Seedlings)			
'88	19199	Dec:	-
'95	480		-
'00	800		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Leptodactylon pungens																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'88	00%		00%		00%												
	'95	00%		00%		00%												
	'00	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'88		0	Dec:		-
													'95		0			-
													'00		20			-
Pediocactus simpsonii																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	1	2	1
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'88	00%		00%		00%												
	'95	00%		00%		00%												
	'00	00%		00%		00%												
Total Plants/Acre (excluding Dead & Seedlings)													'88		0	Dec:		-
													'95		0			-
													'00		20			-
Symphoricarpos oreophilus																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	4	-	-	1	-	-	-	-	-	5	-	-	-	100			5
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	1	2	-	-	-	-	-	-	-	3	-	-	-	200	10	15	3
	95	13	-	2	9	1	1	-	-	-	26	-	-	-	520	9	24	26
	00	18	-	-	7	-	-	2	-	-	21	1	5	-	540	12	22	27
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	1	-	-	-	-	-	1	-	-	1	40			2
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor									%Change			
	'88	67%		00%		00%									+68%			
	'95	03%		10%		00%									- 6%			
	'00	00%		00%		21%												
Total Plants/Acre (excluding Dead & Seedlings)													'88		200	Dec:		0%
													'95		620			0%
													'00		580			7%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Tetradymia canescens																		
Y	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	88	1	-	-	-	-	-	1	-	-	2	-	-	-	133	9	6	2
	95	12	1	-	2	-	-	-	-	-	15	-	-	-	300	6	9	15
	00	13	2	-	1	-	-	-	-	-	16	-	-	-	320	4	9	16
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	1	-	-	-	1	-	-	-	1	-	-	1	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	+34%
'95	07%	00%	00%	+21%
'00	16%	05%	05%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	199	Dec:		0%
'95	300			0%
'00	380			11%

Trend Study 8A-5-00

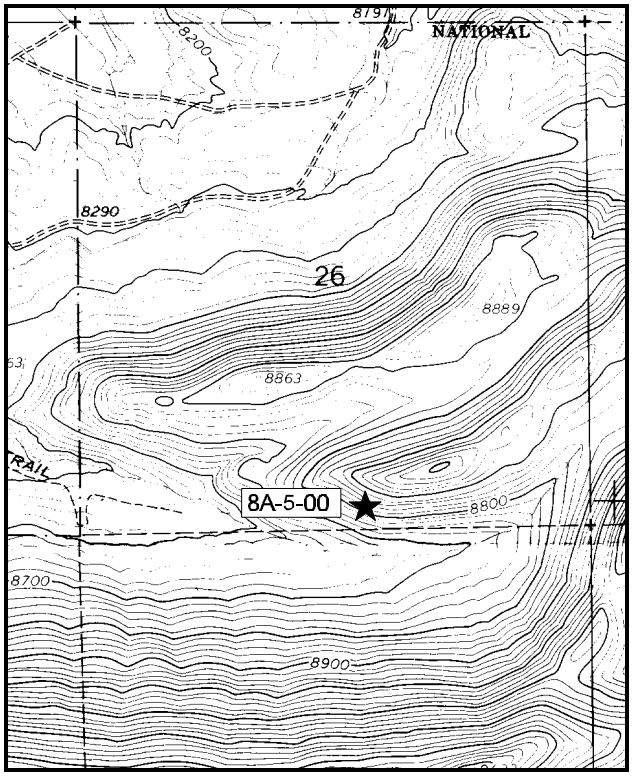
Study site name: Telephone Hollow . Range type: True Mountain Mahogany .

Compass bearing: frequency baseline 22°M .

First frame placement on frequency belts 5 feet. Frequency belt placement; line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft.), line 4 (71ft).

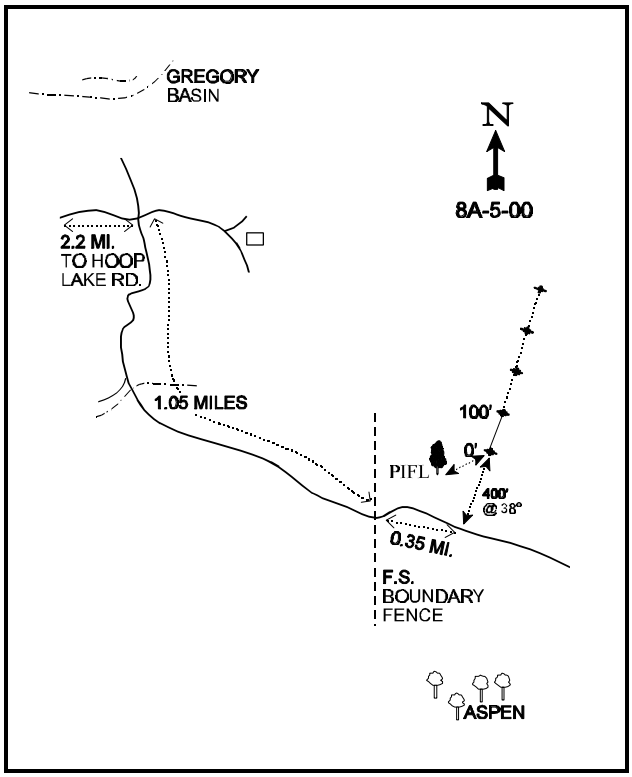
LOCATION DESCRIPTION

From the Hoop Lake Road along Beaver Creek, proceed east on the road to Gregory Basin. Go 0.6 miles to a gate at a private property line. Continue east 1.7 miles to the 4-way intersection south of Gregory Basin. Turn right and go 0.2 miles to a creek. Cross the creek and drive 0.85 miles to a gate at the FS boundary. Go through the gate and continue for 0.35 miles. Stop across from a lone *Pinus flexilis* on the bottom of the south facing slope. The 0-foot stake is approximately 100 feet to the east of the lone *Pinus flexilis.* There is a red browse tag, #7148, attached to the green fencepost marking the 0-foot end of the frequency baseline.



Map Name: Hoop Lake

Township 3N , Range 16E ,Section 26



Diagrammatic Sketch

UTM 4534297 N, 576175 E

DISCUSSION

Trend Study No. 8A-5

The Telephone Hollow study is located on the northeast side of Widdop Mountain, on land administered by the Forest Service. Access is through state and privately owned land. The study is located on the south-facing hillside with a slope of approximately 38% to 40% and an elevation of 8,750 feet. At this elevation, the valley is generally covered by snow through the winter and much of the spring. On the hillside above the seeded hollow, the south slope is dominated by true mountain mahogany. These south slopes are important to wintering elk and are also commonly used by moose and to a lesser extent deer. Cover is provided by conifer on the north-facing slopes. Cattle graze the area early in the season, mostly in the seeded hollow at the base of the slope. Pellet group data from 2000 estimate 31 elk days use/acre and 16 moose days use/acre (77 edu/ha and 40 mdu/ha). A small number of deer and cattle also use the site (3 ddu/acre and 2 cdu/acre respectively).

Soil on the Telephone Hollow site is similar to the other trend studies on Widdop Mountain. It is moderately deep but very rocky on the surface and throughout the profile. The surface horizon is loose, while the layer six inches below the surface is compacted with more rock and gravel. The soil has a loam texture with a slightly alkaline pH (7.4). Parent material is a conglomerate rock formation composed of both limestone and sandstone cobble. Phosphorus and potassium are both limited at just 2.8 ppm and 35.2 ppm respectively. Levels less than 10 ppm for phosphorus and 70 ppm for potassium can limit normal plant growth and development. There is a high erosion potential due to the slope. There is evidence of down slope soil movement in the form of pedestaling and terracing. However, protective ground cover is abundant and well dispersed, keeping soil movement to a minimum.

The key browse species is the abundant and vigorous true mountain mahogany. It provided 94% of the browse cover in 1995 and 75% in 2000. In 1988, population density was estimated at 7,266 plants/acre, 55% being young plants. Mature plants numbered 3,133 plants/acre. During the 1995 reading, the population was estimated at 6,200 plants/acre with mature plants numbering 4,360 plants/acre. Density of young plants declined from 4,000 plants/acre in 1988 to 1,800 plants/acre in 1995. Forty-five percent of the mahogany was heavily hedged in 1988. By 1995, only 22% displayed heavy of use. Although heavily hedged, the plants appeared quite vigorous. Leader growth was good at 4 to 8 inches in 1995. Vigor was reduced on 42% of the mature mahogany due mostly to insect damage from caterpillars. Population density remained fairly stable in 2000 at 6,720 plants/acre. Heavy use increased to 63% of the plants sampled, but vigor remains normal on most plants with percent decadence low at 4%. Due to the dry conditions of 2000, annual leader growth was low averaging only 2.5 inches. As a result, average height/crown measurements declined. Heavy use estimates may also be overestimated since poor leader growth makes these shrubs appear to be more heavily utilized.

The less preferred browse include moderately low numbers of serviceberry and black sagebrush. In 1995, 42% of the black sagebrush displayed heavy use. By far the most numerous shrub is broom snakeweed which had an estimated density of 16,932 plants/acre in 1988. This short lived shrub declined by 89% in 1995 due in part to prolonged drought conditions.

The herbaceous understory on Telephone hollow is not as diverse or abundant as it is on the other mahogany sites in the unit. Common species include: bluebunch wheatgrass, a dry land sedge, and Indian ricegrass. Forbs are moderately diverse but none are very abundant. The most common forbs are low growing species such as cryptantha, low penstemon and hood's phlox.

1995 TREND ASSESSMENT

Ground cover characteristics are similar to those of 1988 with the exception of a slight increase in bare ground

(5% to 7%). Unlike some other sites, litter cover did not decline a great deal. Erosion potential on this site is high, but due to the well dispersed litter and herbaceous vegetation cover, it is not a serious problem. The only soil movement consists of the inevitable, gradual, down slope soil movement with the associated steep slope. Future increases in bare ground should be watched closely. Trend for soil is considered stable at this time. Trend for the dominant browse species, true mountain mahogany, is stable. There has been a slight population decline, with the number of mature plants increasing. Percent decadency decreased, with the proportion of plants displaying heavy use has also declining. Some of this decline can be attributed to the much larger sample size and better sampling design giving a much better estimate of the browse population. The proportion of seedlings and young have declined, yet they are still more than adequate to maintain this moderately long-lived population of true mountain mahogany. Trend for herbaceous understory is slightly up. Sum of nested frequency for grasses increased slightly with nested frequency for bluebunch and Carex both increasing. Forb nested frequency also increased.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - slightly up (4)

2000 TREND ASSESSMENT

Trend for soil is down slightly. Percent bare ground increased more than three-fold from 7% to 23% and sum of nested frequency of perennial grasses declined slightly since 1995. Trend for the key browse, mountain mahogany, is stable. Use is heavier but vigor is good and percent decadence is low at only 4%. Recruitment from young plants is excellent at 29%. Some of the heavy use may be due to the poor annual leader growth in 2000 (averaged only 2.5 inches) which gives the shrubs a more clubbed growth form. Trend for the herbaceous understory is slightly down. Sum of nested frequency of perennial grasses declined slightly while frequency of perennial forbs remained stable. Frequency of Carex and Indian ricegrass declined significantly, while bluebunch wheatgrass remained stable.

TREND ASSESSMENT
soil - down slightly due to drought (2)
browse - stable (3)
herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --
Herd unit 08A, Study no: 5

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	-	4	3	-	2	2	.15	.01
G	Agropyron spicatum	200	215	229	82	85	88	4.35	7.43
G	Carex spp.	$_{ab}$121	$_{b}$162	$_{a}$127	54	69	54	2.70	3.10
G	Koeleria cristata	$_{a}$-	$_{b}$6	$_{b}$8	-	3	3	.06	.18
G	Leucopoa kingii	-	-	2	-	-	1	-	.03
G	Oryzopsis hymenoides	$_{b}$78	$_{ab}$67	$_{a}$43	36	31	23	1.71	1.43
G	Stipa comata	44	10	1	20	4	1	.04	.00
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		443	464	413	192	194	172	9.03	12.19
Total for Grasses		443	464	413	192	194	172	9.03	12.19
F	Antennaria rosea	-	-	3	-	-	1	-	.03
F	Arabis spp.	-	2	-	-	2	-	.01	-
F	Astragalus spp.	$_{a}$-	$_{b}$56	$_{a}$2	-	20	2	1.50	.18
F	Chenopodium leptophyllum (a)	-	$_{b}$26	$_{a}$-	-	10	-	.05	-
F	Cirsium spp.	21	23	26	10	13	13	.39	.46
F	Comandra pallida	$_{a}$2	$_{ab}$15	$_{b}$24	2	7	10	.06	.54
F	Cryptantha spp.	79	91	97	40	39	44	.79	.91
F	Erigeron eatonii	$_{a}$-	$_{a}$-	$_{b}$10	-	-	4	-	.02
F	Erigeron spp.	-	-	2	-	-	1	-	.00
F	Heterotheca villosa	-	-	2	-	-	1	-	.03
F	Hymenoxys acaulis	$_{a}$3	$_{b}$13	$_{a}$3	1	7	1	.03	.01
F	Lesquerella alpina	$_{a}$13	$_{b}$50	$_{b}$48	6	22	30	.13	.44
F	Lithospermum incisum	19	12	14	9	8	7	.11	.16
F	Linum lewisii	$_{a}$-	$_{b}$10	$_{b}$17	-	4	7	.02	.20
F	Machaeranthera grindelioides	34	46	24	20	21	12	.26	.34
F	Oenothera spp.	-	-	1	-	-	1	-	.00
F	Penstemon humilis	63	91	73	32	45	35	.74	.69
F	Phlox hoodii	61	47	68	28	21	29	.50	1.53
F	Townsendia incana	$_{b}$7	$_{a}$-	$_{b}$4	4	-	3	-	.09
F	Trifolium dasyphyllum	$_{b}$5	$_{a}$-	$_{b}$53	3	-	18	-	1.61
F	Zigadenus elegans	$_{a}$-	$_{b}$13	$_{a}$-	-	7	-	.03	.00
Total for Annual Forbs		0	26	0	0	10	0	0.05	0
Total for Perennial Forbs		307	469	471	155	216	219	4.61	7.29
Total for Forbs		307	495	471	155	226	219	4.66	7.29

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --
Herd unit 08A, Study no: 5

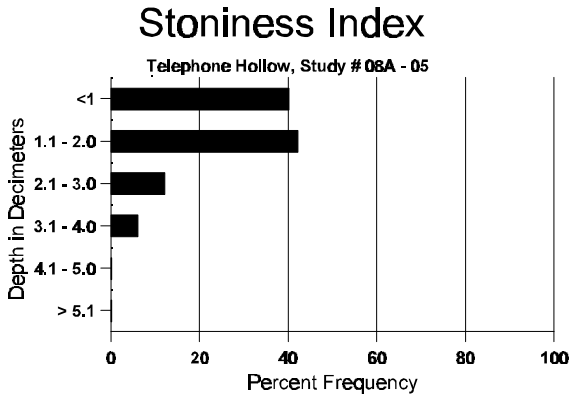
Type	Species	Strip Frequency '95	Strip Frequency '00	Average Cover % '95	Average Cover % '00
B	Amelanchier alnifolia	5	9	-	1.08
B	Artemisia frigida	18	22	.22	.40
B	Artemisia nova	12	14	.05	1.08
B	Cercocarpus montanus	97	96	19.10	17.37
B	Chrysothamnus viscidiflorus lanceolatus	1	1	-	-
B	Eriogonum microthecum	8	12	.36	.27
B	Gutierrezia sarothrae	40	82	.54	2.98
B	Pinus flexilis	0	2	-	-
B	Tetradymia canescens	8	7	.03	.06
Total for Browse		189	245	20.31	23.27

BASIC COVER --
Herd unit 08A, Study no: 5

Cover Type	Nested Frequency '95	Nested Frequency '00	Average Cover % '88	Average Cover % '95	Average Cover % '00
Vegetation	332	342	9.25	32.12	42.25
Rock	308	259	8.00	16.22	12.11
Pavement	336	327	45.50	21.33	25.05
Litter	374	347	32.25	30.12	29.00
Cryptogams	8	-	0	.12	0
Bare Ground	261	299	5.00	7.17	23.39

SOIL ANALYSIS DATA --
Herd Unit 8A, Study # 5, Study Name: Telephone Hollow

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
14.91	56.8 (16.30)	7.4	49.4	33.0	17.6	4.1	2.8	35.2	0.6



PELLET GROUP FREQUENCY --
Herd unit 08A, Study no: 5

Type	Quadrat Frequency '95	Quadrat Frequency '00	Pellet Transect: Pellet Groups per Acre ⁄00	Pellet Transect: Days Use per Acre (ha) ⁄00
Moose	6	9	287	16 (39)
Elk	15	12	400	31(76)
Deer	4	-	44	3 (8)
Cattle	-	-	17	2 (4)

BROWSE CHARACTERISTICS --
Herd unit 08A, Study no: 5

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier alnifolia																		
Y	88	-	1	-	-	-	-	1	-	-	2	-	-	-	133			2
	95	-	-	-	2	-	-	-	-	-	2	-	-	-	40			2
	00	-	-	-	-	1	-	-	-	-	1	-	-	-	20			1
M	88	-	1	-	-	-	-	-	-	-	1	-	-	-	66	20	39	1
	95	-	2	-	1	2	-	-	-	-	4	1	-	-	100	20	31	5
	00	-	6	2	-	-	1	-	-	-	9	-	-	-	180	17	25	9

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	67%	00%	00%	-30%
'95	57%	00%	00%	+30%
'00	70%	30%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	199	Dec:	-
	'95	140		-
	'00	200		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia frigida																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	88	6	-	-	-	-	-	-	-	-	6	-	-	-	400	4	4	6
	95	16	-	-	8	-	-	-	-	-	24	-	-	-	480	4	7	24
	00	26	-	-	3	-	-	1	-	-	30	-	-	-	600	3	6	30

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	+20%
'95	00%	00%	00%	+29%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	400	Dec:	-
	'95	500		-
	'00	700		-

Artemisia nova																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66	7	8	1
	95	-	-	11	15	-	-	-	-	-	26	-	-	-	520	6	15	26
	00	13	2	-	2	-	-	-	-	-	17	-	-	-	340	5	13	17
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	4	1	-	-	-	-	-	-	-	4	-	-	1	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	+87%
'95	00%	42%	00%	-12%
'00	13%	00%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	66	Dec:	0%
	'95	520		0%
	'00	460		22%

Ceratoides lanata																		
Y	88	1	-	-	-	-	-	-	-	-	-	-	1	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	100%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	66	Dec:	-
	'95	0		-
	'00	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus montanus																		
S	88	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	10	-	-	2	-	-	-	-	-	12	-	-	-	240			12
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
Y	88	34	17	8	-	-	-	1	-	-	60	-	-	-	4000			60
	95	17	51	14	5	3	-	-	-	-	90	-	-	-	1800			90
	00	57	26	3	-	-	8	2	-	-	94	-	2	-	1920			96
M	88	1	6	40	-	-	-	-	-	-	47	-	-	-	3133	25	23	47
	95	2	14	17	7	142	36	-	-	-	126	66	26	-	4360	21	36	218
	00	7	16	97	-	13	93	-	-	-	226	-	-	-	4520	18	28	226
D	88	-	1	1	-	-	-	-	-	-	1	-	1	-	133			2
	95	-	-	1	-	1	-	-	-	-	1	-	1	-	40			2
	00	-	-	2	1	1	9	1	-	-	9	-	-	5	280			14
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	22%	45%	.91%	-15%
'95	68%	22%	09%	+ 8%
'00	17%	63%	02%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	7266	Dec:		2%
'95	6200			1%
'00	6720			4%

Chrysothamnus viscidiflorus lanceolatus																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20	5	8	1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	9	13	0
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	+ 0%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	0	Dec:		0%
'95	20			0%
'00	20			100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Eriogonum microthecum																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	15	-	-	-	-	-	-	-	-	15	-	-	-	300	5	11	15
	00	20	-	-	-	-	-	-	-	-	20	-	-	-	400	5	7	20
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	+32%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	0	Dec:		0%
'95	300			0%
'00	440			5%

Gutierrezia sarothrae																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
Y	88	19	-	-	-	-	-	-	-	-	19	-	-	-	1266			19
	95	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
	00	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
M	88	231	-	-	-	-	-	-	-	-	231	-	-	-	15400	7	5	231
	95	88	-	-	-	-	-	-	-	-	88	-	-	-	1760	5	6	88
	00	255	-	-	1	-	7	-	-	-	263	-	-	-	5260	5	9	263
D	88	4	-	-	-	-	-	-	-	-	2	-	1	1	266			4
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	6	-	-	-	-	-	-	-	-	5	-	-	1	120			6
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	.78%	-89%
'95	00%	00%	00%	+65%
'00	00%	03%	.36%	

Total Plants/Acre (excluding Dead & Seedlings)			
'88	16932	Dec:	2%
'95	1940		0%
'00	5520		2%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pinus flexilis																		
Y	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	66	Dec:	-
	'95	0		-
	'00	40		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Tetradymia canescens																		
Y	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66	4	7	1
	95	6	3	-	-	-	-	-	-	-	9	-	-	-	180	6	11	9
	00	5	2	1	-	-	-	-	-	-	8	-	-	-	160	7	9	8

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	+ 1%
'95	30%	00%	00%	-20%
'00	25%	13%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	199	Dec:	-
	'95	200		-
	'00	160		-

SUMMARY

WILDLIFE MANAGEMENT UNIT - 8A NORTH SLOPE, SUMMIT

Five trend study sites were established on this management unit in 1988 and reread in 1995. In 2000, Bald Mtn. South (8A-3) was not reread due to its close proximity to Bald Mtn (8A-4). However, a pellet group transect was read and annual growth of mountain mahogany was measured. Three trend studies are located around Widdop Mountain and 2 are on the Bald Range. They all sample true mountain mahogany stands which are considered important elk winter range. Moose and to a lesser extent deer and antelope, also use these sites. Pellet group data from 2000 indicate an average of 43 elk use days/acre (106 edu/ha) on the five trend studies in unit 8A. A high of 66 elk days use/acre (163 edu/ha) was found on Widdop Mtn. South Slope (8A-1) and a low of 31 elk days use/acre (77 edu/ha) occurred at Telephone Hollow (8A-5). Moose use was found on 3 of the 5 sites, Widdop Mtn. South Slope (8A-1), Widdop Mtn. North Slope (8A–2) and Telephone Hollow (8A-5). Both Widdop Mtn. North Slope and Telephone Hollow had an estimated 16 moose days use/acre (40 mud/ha). Widdop Mtn. South Slope had 9 moose days use/acre (22 mdu/ha).

The key browse species on all 5 trend study sites consists of true mountain mahogany. Browse trends are currently stable on all sites but due to the dry conditions of 2000, annual leader growth averaged only 2.4 inches. Height/crown measurements also declined on 3 of the 4 sites. Browsing of mahogany was heavy in 2000, averaging 58%. Some of the increased heavy use in 2000 is likely due in part to poor leader growth which gives mahogany a more heavily hedged appearance. All of the mahogany populations on these sites are in good health with abundant young plants, stable mature populations, good vigor and low decadence.

Herbaceous trends are slightly down on 3 of the 4 sites but these trends will improve with a return to normal precipitation patterns.

Trend Summary

	Category	1982	1995	2000
8A-1 Widdop Mtn. South Slope	soil	est	3	3
	browse	est	3	3
	herbaceous understory	est	2	3
8A-2 Widdop Mtn North Slope	soil	est	5	3
	browse	est	3	3
	herbaceous understory	est	2	2
8A-3 Bald Range South	soil	est	3	NR
	browse	est	4	NR
	herbaceous understory	est	2	NR
8A-4 Bald Range	soil	est	3	3
	browse	est	3	3
	herbaceous understory	est	3	2

(1) = down, (2) = slightly down, (3) = stable, (4) = slightly up, (5) = up,
(est) = site established, (NR) = site not read

	Category	1982	1995	2000
8A-5 Telephone Hollow	soil	est	3	2
	browse	est	3	3
	herbaceous understory	est	4	2

(1) = down, (2) = slightly down, (3) = stable, (4) = slightly up, (5) = up,
(est) = site established, (NR) = site not read